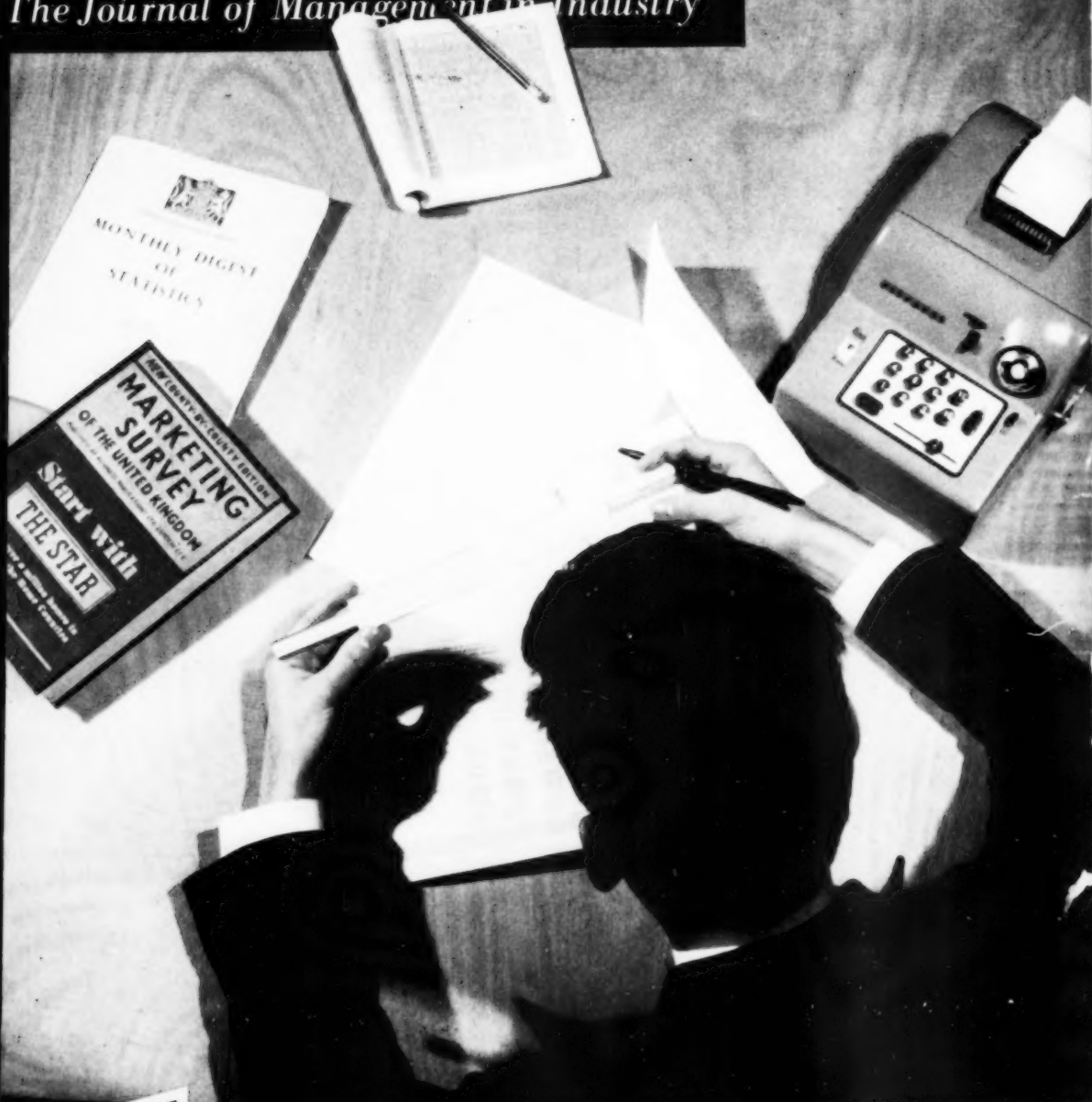


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BUSINESS

The Journal of Management in Industry

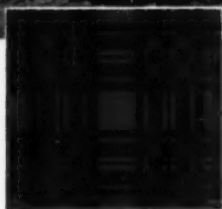


NEW
ON PAGE 33

PROSPECT

A Monthly Economic
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Famous Scottish Names...
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Motto: "Touch not the cat
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The clan Mackintosh is both ancient and famous. Serving as a link with a fierce, romantic and picturesque past is the story of the '15 concerning Lachlan Mackintosh, the twentieth chief. At Preston he gave up his sword on condition that it would be returned if he escaped with his life. He survived, but the sword was not returned. A successor declared if the sword were not returned he would fight for it — but it came back without demur. The sword, originally a gift from Viscount Dundee and still preserved at Moy Hall, continues to play an impressive role at the burial ceremony of each Mackintosh chief.

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Business

THE JOURNAL OF MANAGEMENT IN INDUSTRY

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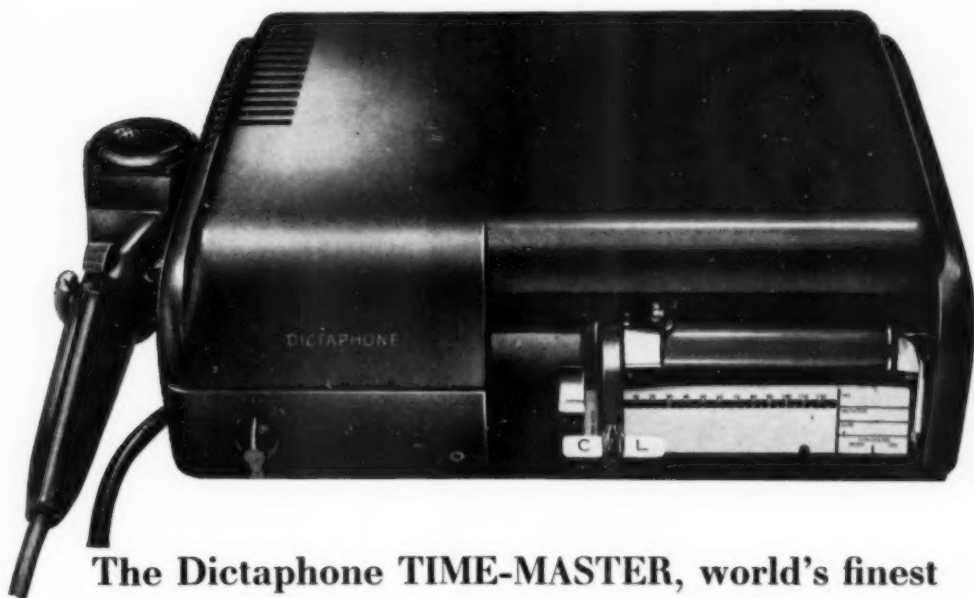
BUSINESS, Vol. 83, No. 4 (Incorporating "The Magazine of Commerce," "Modern Business," "System," "Business Organization and Management," "Business News Digest" and "British Industrial Equipment"). Published monthly by Business Publications, Ltd., 180 Fleet Street, London, E.C.4. CHANCERY 8844. Subscription Rates : 30/- a year post free in U.K.; 35/- Overseas.



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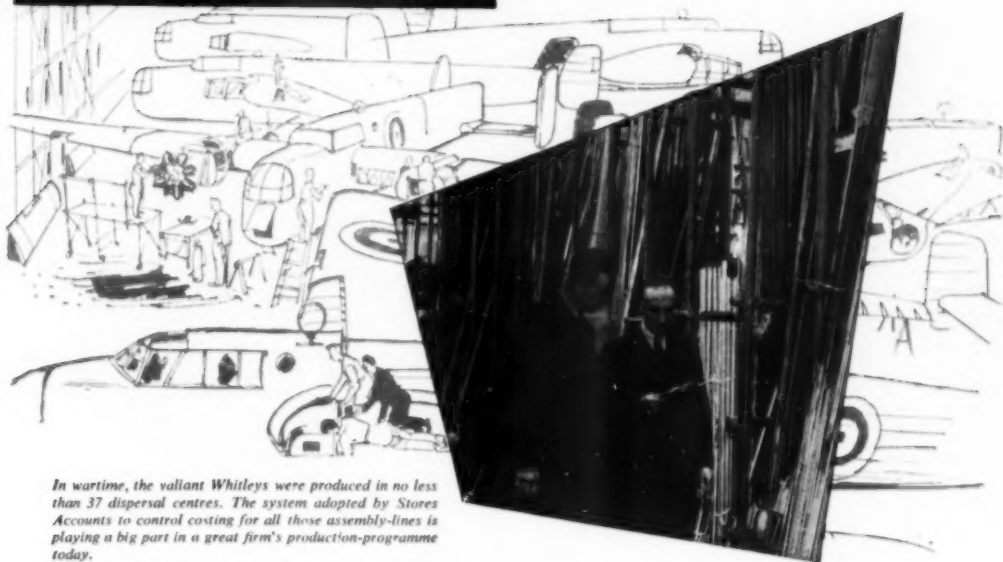
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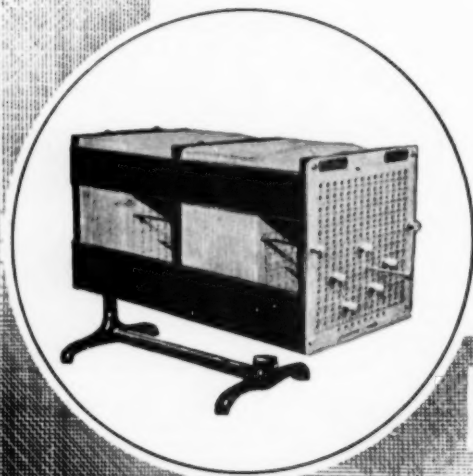
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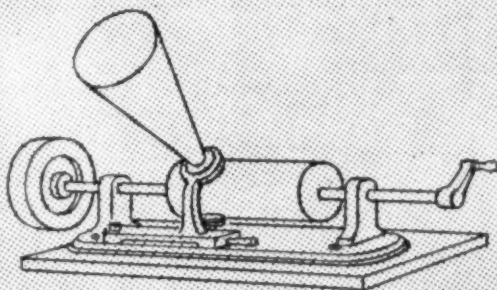
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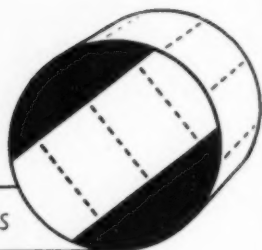
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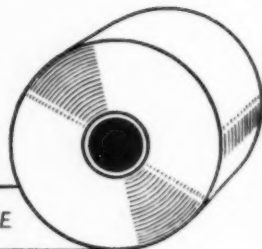
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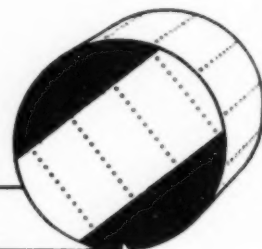
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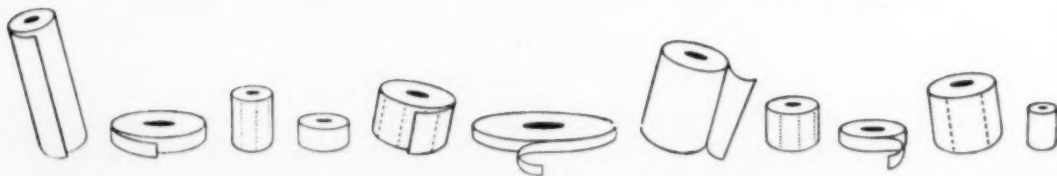


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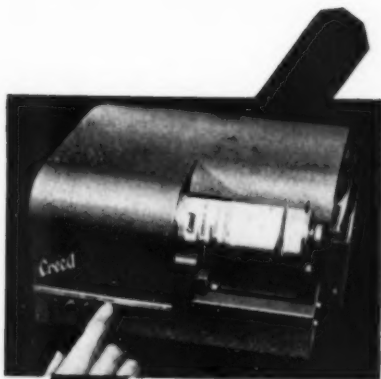


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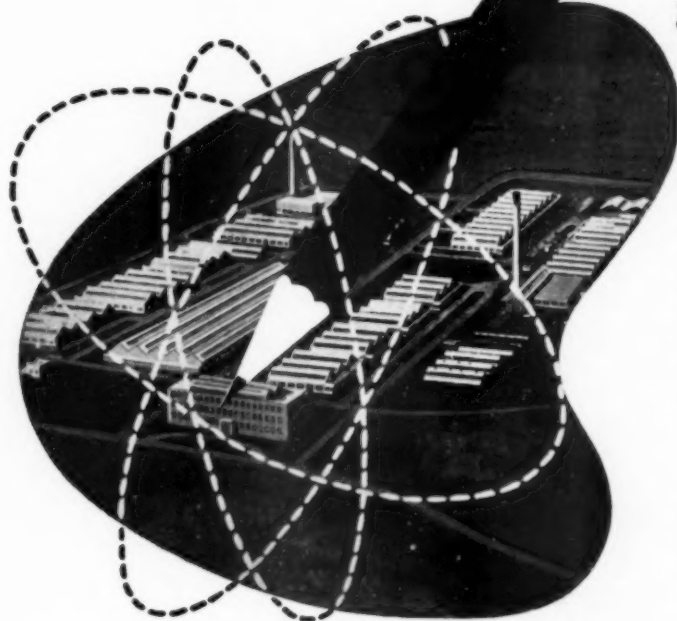
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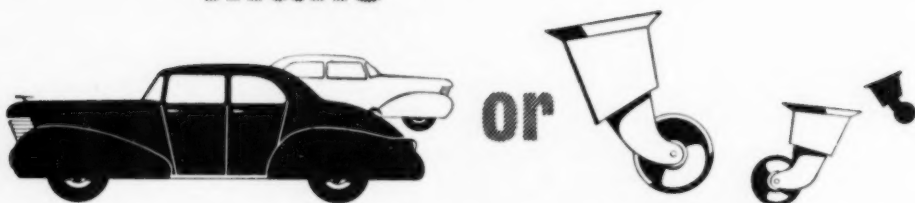
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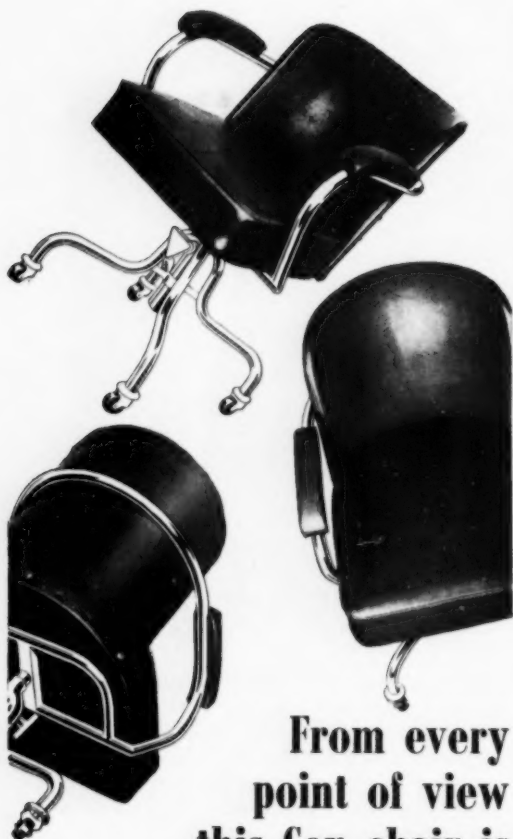
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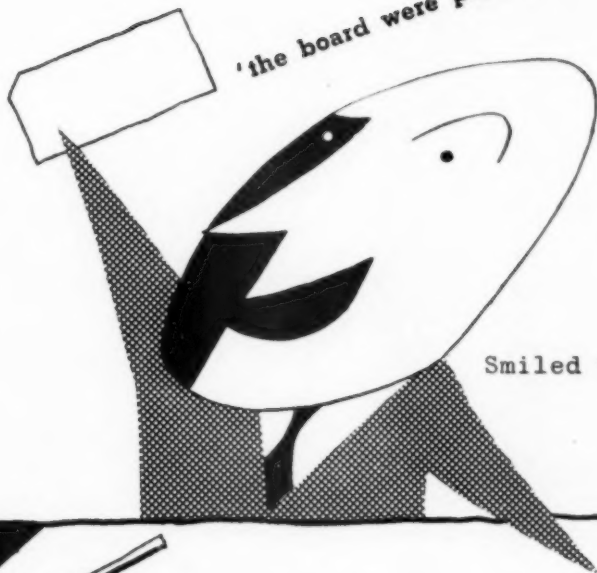
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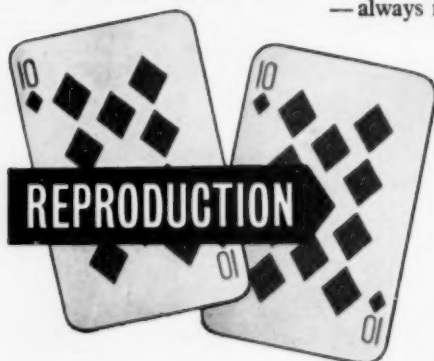
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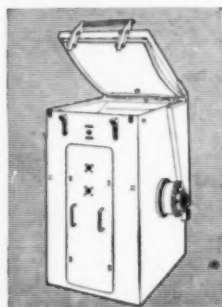
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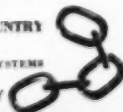
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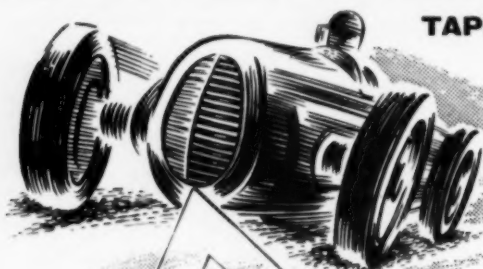
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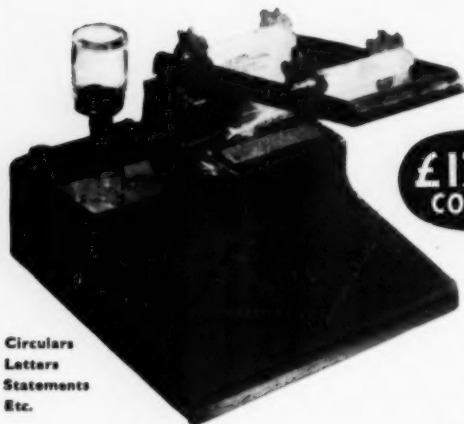
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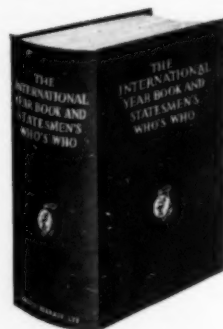
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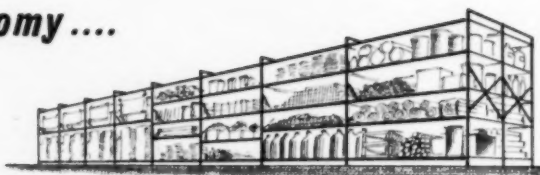
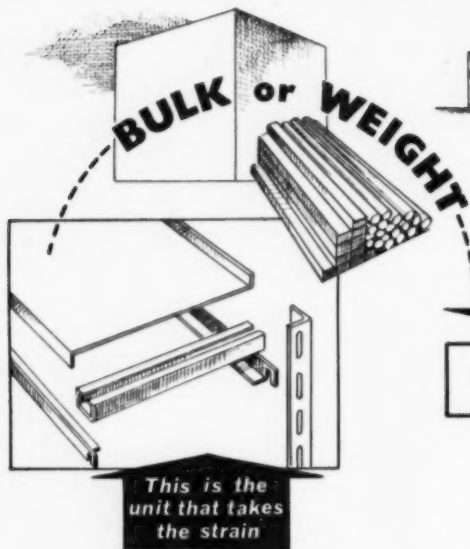
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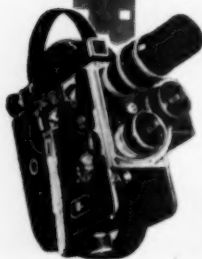
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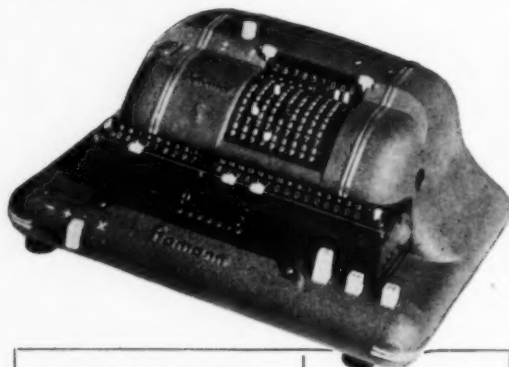
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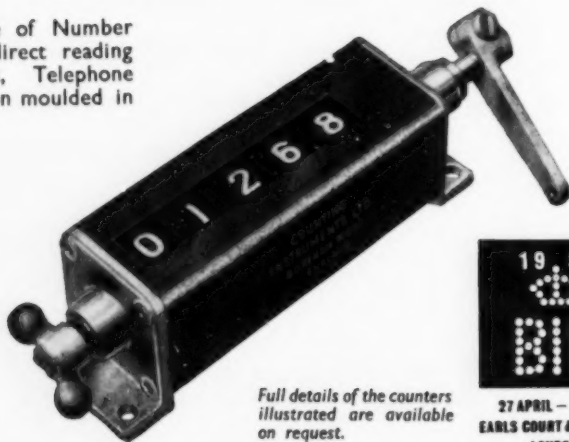
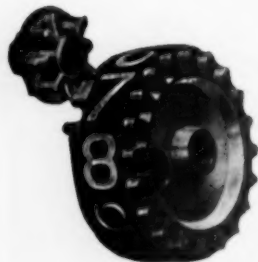
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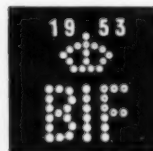
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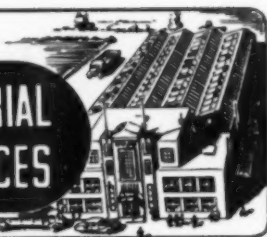
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Home Market Remains Steady

THE MONTH'S HIGHLIGHTS AND TRENDS

● Most retailers report continued high overall turnover, with a normal pre-budget lull in buying of goods subject to purchase tax. Notable exception: television sets, enjoying a pre-Coronation boom. Latest figures show nearly 2m. sets in use—three times as many as two years ago. Sales in London, too, are expanding as rapidly as in the new TV areas.

● Sales of durables are being cut by switch of spending to goods now freely available again—sweets, petrol, eggs. Latest reports show sweet consumption up one-third in the provinces, one-half in London and suburbs. Petrol is selling well too. Success of de-control has encouraged government to persevere: look soon for branded margarine again.

● Wholesale buying on the whole is still good, though January textile sales were disappointing. But readjustment to increasingly competitive conditions is making buyers more cautious. Selling gets harder every day.

● Current recession in raw material industries, notably aluminium and tinplate, is merely the result of last year's recession working through the economy. Major factor is heavy stocks: look for a rapid recovery as soon as these are absorbed. Long-term demand should increase.

● Engineering is another kettle of fish. American off-shore orders for armaments are keeping certain sections busy. And the aeronautical side is working to capacity. But firms working for the consumer market are in the doldrums; the Hoover report tells the tale. The motor industry is particularly badly hit—and is likely to remain so. Look soon for major changes in sales policy to meet the new conditions. Prices must come down.

● This is not going to be easy. Higher coal prices will not help. Initial effect was to step up freight rates and cement and gas prices. Further repercussions, however, should not be serious. Electricity undertakings are, in the main, absorbing the increased costs. Other raw material industries should do likewise. General trend of raw material prices is still downwards. The coal increase may interrupt, but should not halt this.

● Labour has seen the red light. The Austin strike has failed to spread. Engineering unions are soft-peddalling on claims for another increase, in spite of the miners' success. Even cotton workers are thinking again.

● Don't expect too much from double shift talk. The T.U.C. has washed its hands of the subject and individual unions do not like it. Only hope is in the factories where mechanization is high and machines are new.

continued on following page

THE MONTH'S HIGHLIGHTS AND TRENDS

● Industrial production in January recovered to about the same level as in January, 1952. Data from individual industries suggests that the recovery has continued since. Coal output, after an unaccountable fall in mid-February, is again rising. Steel production in February broke all records at 364,300 tons—a yearly rate of 18m. tons.

● More yarn and cloth is being produced by Lancashire mills; January output of cloth was 6 per cent. higher than in December, though still 15 per cent. below the January, 1952, figure. February showed the second best weekly result in 12 months. And in January, 5,000 more houses were completed than in January, 1952.

● Look for a new war in the air. Pan-American World Airways want a 45 per cent. cut in transatlantic bulk cargo rates—and have threatened to go ahead on their own if other airlines won't play. This would reduce air freight to less than shipping costs. But unilateral action might break the International Air Transport Association. New tourist-class air passenger services are booming; B.E.A. traffic to Scotland was up 155 per cent. following the cut in fares. Internationally, agreement between airlines seems to be going by the board. This, too, may degenerate into a free-for-all. B.O.A.C., with the Comet and Britannia up their sleeve, are busy putting their house in order.

● Rising production has been reflected in a bull market on the Stock Exchange, in both industrial and gilt-edged shares. At writing, this trend has eased. One factor is fear of further inflation.

● Overall budget deficit for the year is now expected to be £350m. Bank deposits dropped less than usual in February (the Lloyds Bank index, seasonally adjusted, showed a rise), and clearings were higher. More significant pointer: ratio of liquid assets to deposits was well above the 30 per cent. minimum it should have touched if the government's monetary policy had been working according to plan. Bank advances were up—and could have been greater if banks had not exercised restraint. But credit restriction is cracking. If your bank manager refused you an overdraft six months back, ask him again now. He may relent. The City is wondering whether the edge of the Butler axe has been blunted.

● So too are others. Sterling, which hit the Exchange Control ceiling of \$2.82 in early February, has since dropped, in spite of the \$125m. increase in dollar and gold reserves in February. American buyers who entered the London money market in February for the first time since the war, have since kept quiet. Setback is still small, but wants watching.

● The Butler-Eden mission may help. Politically highly successful, it is not likely to bring immediate economic returns. Do not, in particular, expect any rapid move on convertibility. Some important Americans and many Europeans do not like the idea; patient and protracted negotiations will be necessary to sell it. When it comes, it will necessarily be a compromise—certainly not a panacea for the dollar shortage.

● E.C.E. experts predict three alternative solutions; world-wide convertibility of currencies, a series of self-contained economic units (dollar area, sterling area, E.P.U.), or a hodge-podge that will break down into another dollar crisis in a year or two. And they plump, gloomily, for the third.

● Main tip for the Budget—concessions on depreciation allowances and increased facilities for capital formation.

SALIENT FIGURES OF THE MONTH

Comment

January retail sales (26) were only 8 points above the January, 1952, figure. Main factor, shorter January sales. Last year, sales organized on a large scale. But quietness seems to be continuing.

Trade gap in February was lowest since October. But this was due almost entirely to drop in imports (21). A short month meant falls in both imports and exports (23). But on a daily basis, imports dropped 5.6 per cent. from January, while exports rose by a negligible fraction.

Sales to visitors under the Personal Export Scheme were 11 per cent. lower in 1952 than in 1951. Total: £4,533,000, against £5,102,000.

Textile recovery is spotlighted by high figures for output of cotton yarn (14) and worsted yarn (16), and a record figure for rayon yarn and staple fibre (15). Production of wool tops per working day was the best since 1950.

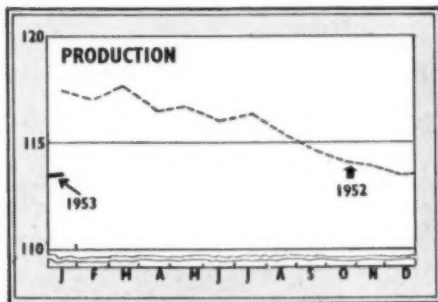
Total net tonnage of vessels in foreign trade entering U.K. ports in January was 5.3m. tons—highest January figure since 1938.

Basic material prices (34) fell again in February. Note: B.o.T. has started 7 new price indices: dyes and dyestuffs, cast stone and cast concrete products, cement, three for bricks, and granite chippings. For details see B.o.T. Journal.

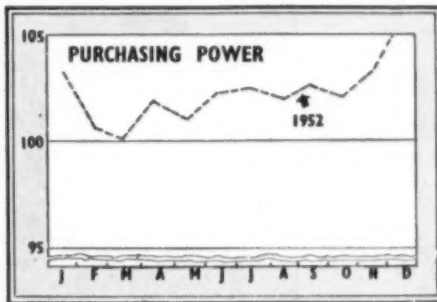
				Increase (+) or Decrease (—) on a		
				Latest Month	Month Ago	Year Ago
BUSINESS INDICES						
1. Production	1948=100	* 113.8	— 0.2	— 3.5		
2. Purchasing Power	(do.)	* 105.6	+ 2.3	+ 0.3		
MANPOWER						
3. Total manufacturing industries	thousands	* 8,683	— 22	— 123		
4. Textiles	(do.)	* 950	+ 6	— 54		
5. Engineering, shipbuilding and electrical	(do.)	* 2,558	— 7	— 29		
6. Distributive trades	(do.)	* 2,622	— 25	+ 23		
7. Coal (on colliery books)	(do.)	722	+ 2	+ 20		
8. Registered unemployed (G.B.)	(do.)	452.5	+ 53	+ 73.8		
PRODUCTION						
9. Index of production: total, all industries	1946=100	* 111	— 10	— 2		
10. Coal (average weekly output) (thousand tons)		4,630	+ 578	+ 293		
11. Gas available at gasworks (average weekly output)	(million therms)	63.9	+ 0.2	+ 1.2		
12. Electricity generated	(million kWh)	6,609	+ 46	+ 256		
13. Steel ingots and castings (average weekly output)	(thousand tons)	† 364	+ 18	+ 51		
14. Cotton yarn	(million lb.)	* 13.3	— 1.5	— 3.4		
15. Rayon yarn and staple fibre	(do.)	* 29.22	+ 1.44	+ 0.68		
16. Worsted yarn	(do.)	* 19.26	+ 1.53	+ 4.83		
17. Sulphuric acid	(thousand tons)	* 156.7	+ 16.4	+ 14.0		
18. Passenger cars (average weekly output) (thousands)		10.28	+ 1.29	+ 1.21		
19. Commercial vehicles (average weekly output) (do.)		5.15	+ 0.51	+ 0.15		
20. Permanent houses completed	(do.)	20.76	+ 3.89	+ 4.42		
TRADE						
21. Value of imports	(£m)	+ 243.0	— 47.1	— 53.8		
22. Value of imports, Western Hemisphere	(£m)	* 43.9	— 1.6	— 24.4		
23. Value of exports	(£m)	+ 204.0	— 23.4	— 40.1		
24. Value of exports Western Hemisphere	(£m)	* 27.1	— 3.4	+ 6.5		
25. Freight train traffic	(thousand tons)	†† 5.60	+ 0.30	+ 0.11		
26. Retail sale index	1947=100	* 112	— 44	+ 8		
FINANCE						
27. Currency in circulation	(£m)	1,399	— 56	+ 79		
28. Deposits, London clearing banks	(do.)	6,259	— 201	+ 55		
29. Provincial cheque clearings	(£,000)	7,820	+ 970	— 140		
30. National savings, total outstanding	(£m)	* 6,011	— 27	— 81		
31. Gold and dollar reserves	(do.)	706	+ 47	— 21		
WAGES AND PRICES						
32. Weekly wage rates	1947=100	134	Same	+ 7		
33. Retail prices	(do.)	138	Same	+ 6		
34. Price indices of materials used in industry	1949=100:					
Non-food manufacturing industry	(do.)	+ 150.5	— 1.4	— 26.5		
Mechanical engineering	(do.)	+ 148.1	— 0.5	+ 4.5		
Electrical machinery	(do.)	+ 161.3	— 0.9	+ 1.1		
Building and civil engineering	(do.)	+ 131.0	— 0.2	— 3.8		
35. Import prices	1952=100	93	Same	— 12		
36. Export prices	(do.)	98	— 1	— 2		
37. Terms of trade	(do.)	95	+ 1	— 10		

*December. †February. ††Four weeks to January 20th, 1953
All other figures refer to January.

"BUSINESS" INDICES (1948-100)



A twelve-month moving average of the Official Index of Industrial Production (Total: All Industries).



An unweighted index of currency in circulation with the public, total bank deposits, and total outstanding national savings.



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HOME MARKET

Regional Surveys

London and S.E. England

Practically all firms affected by the recent floods have now resumed normal working. Main damage was by injury to plant, fixtures and stock, while production was delayed through dislocation of normal routine in workshops. Very little equipment was actually lost, but the financial loss, particularly to small firms, was heavy. The Ministry of Supply is preparing a comprehensive report on the effects of the disaster on production and employment.

The Vacuum Oil Company's new refinery at Coryton, which had been running for only nine hours before it was flooded, resumed operations at the end of February, and the Anglo-Iranian's new refinery on the Isle of Grain came "on stream" a few days later.

North-Western

Recovery in cotton continues, and output is almost up to pre-slump levels. Inquiries for yarn and cloth have been on a considerable scale. Tariff increases in India and Australia have affected export markets, but other countries have been placing substantial orders. Buying for the home trade has been well maintained, and weavers can no longer offer speedy deliveries. Spinners have done well from local trade, and, in general, from export orders, though inquiries from continental markets have been slow.

So rapid has been recovery that local interests are now deploring the scheduling of North Lancashire as a development area. According to Sir Cuthbert Clegg, the move was "premature," since unemployment in the area has now fallen to low levels and there is little surplus labour for new industries. From 25 to 30 sites for factories in the area have been suggested to the Board of Trade.

Current activity in engineering continues high, but some slackening has been noted in new orders, particularly for machine tools and machinery for the textile and paper trades. The slack has, however, been taken up by increased

orders for aircraft and armament work, and there is still a shortage of skilled engineering workers, despite rising unemployment.

Brick output in January reached a new record, but stocks are still dwindling. Steel output is increasing, but is not yet fulfilling all demands. Shortages are reported of plates, joists and sections, and mild-steel bars.

Wales

Talking point in South Wales is tinplate. Two problems are involved. First is a recession in total demand; this is thought to be temporary—the better deliveries promised by the new mills have caused customers to run down their stocks. Recovery should be rapid. The second problem is more difficult—that of technological unemployment. The closing down of the hand-operated mills in West Wales has coincided with a recession in engineering work, and the absorption of the workers laid off has not been easy. Many, indeed, are still unemployed.

Work has now begun on the Llangyfelach cold reduction mill, which will be a partner to the Trostre mill now starting production. Trostre's first export order was loaded at Swansea at the end of January.

Government policy on development areas is changing. This is being felt throughout Wales. Emphasis now is on expansion of factories already developed, rather than on introduction of new firms. Many companies are finding it easier to get licences for extensions.

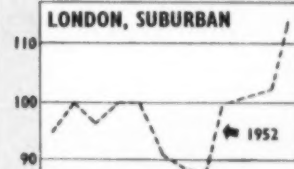
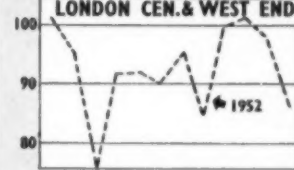
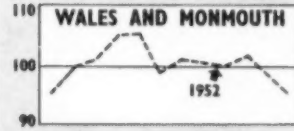
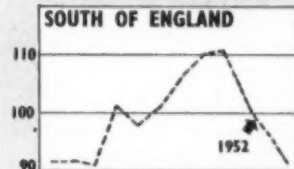
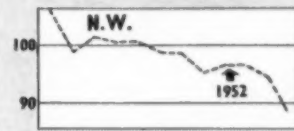
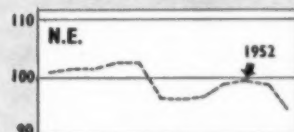
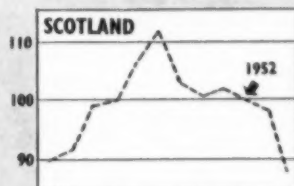
One new light industry is reported—a new factory at Pontlliw,

Continued on page 41

What the Chart Shows

Regional indices in the chart show the retail turnover in the region in non-food merchandise as a percentage of the national average for the month. The charts are based on the Board of Trade retail sales indices.

REGIONAL RETAIL TRADE INDICES

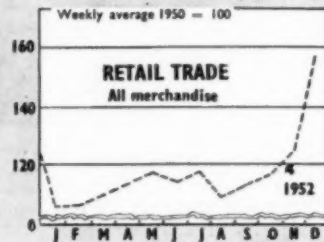
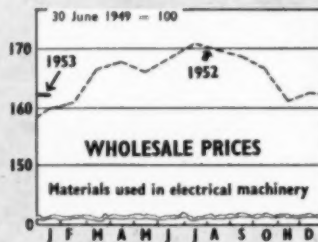
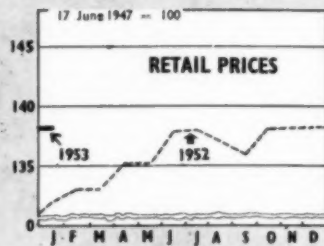
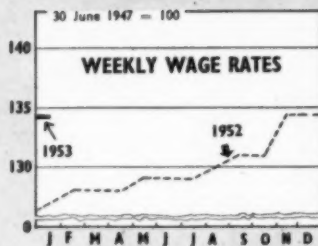


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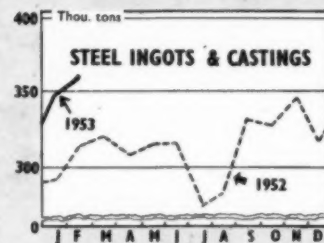
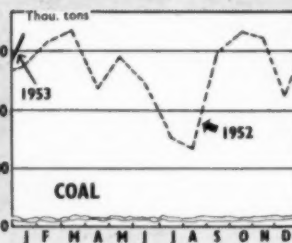
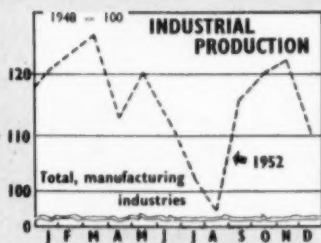
STATE OF THE NATION

From this comprehensive series of charts, covering the main economic factors affecting the state of the nation, the businessman may gain a perspective of the situation governing his operations.

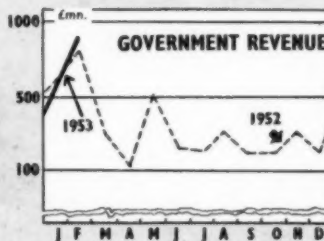
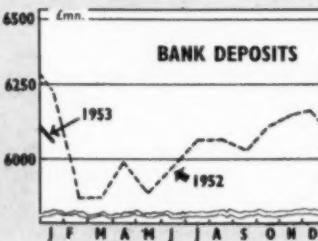
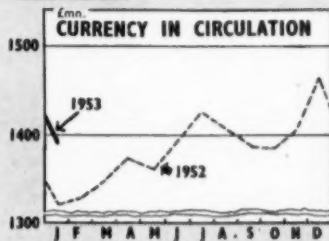
WAGES AND PRICES



PRODUCTION

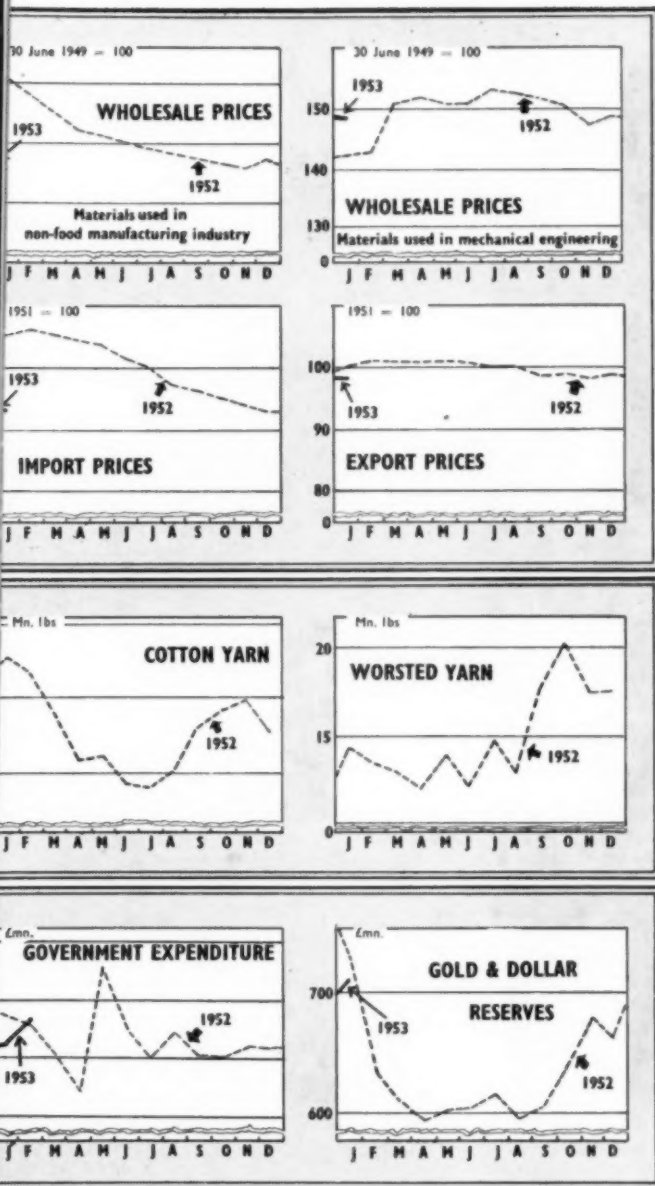


FINANCE

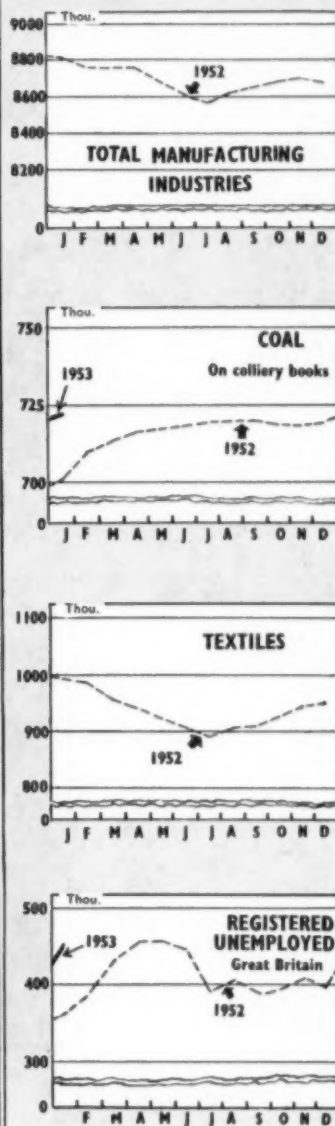


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INCOME GROUPS IN THE COUNTIES 1949-50

Regional variations in income are vital purchasing power data for the sales manager. Authoritative sources, however, have been scarce. Now the Income Tax Commissioners have for the first time released details of incomes, before tax, classified by county in which the main place of assessment is situated, by range of income, and by type of income. The following table is specially compiled by PROSPECT from Tables 90 to 185 of the 95th Report of the Commissioners of Inland Revenue for 1952 (Cmd. 8726).

Income groups; A, £1,000 and over; B, £700 to £999; C, £400 to £699; D, £250 to £399; E, under £250.

LONDON and S. E. ENGLAND							MIDLAND and N. MIDLANDS—cont.						
	Average income £	A %	B %	C %	D %	E %		Average income £	A %	B %	C %	D %	E %
Bedfordshire ...	392	2.67	3.21	26.7	37.4	30.0	Northamptonshire ...	380	2.89	2.47	21.9	40.9	31.8
Berkshire ...	389	3.43	2.52	16.4	42.6	35.0	Leicestershire ...	407	3.02	3.03	25.0	36.9	32.1
Buckinghamshire ...	390	3.09	3.11	21.4	40.2	32.8	Staffordshire ...	381	2.15	2.31	26.6	37.8	31.0
Essex ...	378	2.48	2.69	22.8	40.7	31.2	Derbyshire ...	384	1.83	2.67	28.7	38.0	28.8
Hertfordshire ...	398	3.21	3.24	24.4	38.2	31.0	Nottinghamshire ...	380	2.24	2.70	24.8	37.9	32.3
Kent ...	382	2.90	2.38	19.6	42.2	32.9	YORKSHIRE						
Middlesex ...	442	4.37	4.12	25.5	36.5	29.6	East Riding ...	386	3.55	3.07	17.2	41.4	34.8
Oxfordshire ...	422	4.16	2.71	22.5	38.5	32.2	West Riding ...	394	2.67	2.46	24.2	39.0	31.6
Surrey ...	398	3.29	3.06	22.4	39.7	31.6	N. W. ENGLAND						
Sussex ...	394	4.36	2.96	14.5	39.9	38.2	Lancashire ...	381	2.57	2.44	22.5	38.0	34.5
City of London ...	542	6.94	6.06	26.8	33.4	26.8	Cheshire ...	371	2.60	2.26	21.0	40.9	33.4
EASTERN ENGLAND							Cumberland ...	362	2.90	2.52	19.9	38.9	35.8
Lincolnshire ...	393	3.13	2.73	20.2	41.5	32.4	Westmorland ...	416	5.11	3.42	16.9	38.6	35.9
Norfolk ...	357	2.80	2.00	12.5	45.2	37.5	N. ENGLAND						
Suffolk ...	376	3.19	2.07	13.3	44.1	37.3	Yorkshire (N. Riding) ...	372	2.75	2.05	21.5	39.4	34.2
Cambridgeshire ...	406	4.06	2.34	15.5	40.1	38.0	Durham ...	358	1.38	1.80	25.2	40.5	31.1
Huntingdonshire ...	389	3.01	2.55	18.2	41.0	35.2	Northumberland ...	380	2.56	2.39	22.2	40.6	32.2
Rutland ...	383	4.06	2.57	12.2	42.4	38.8	WALES						
S. and S. W. ENGLAND							Anglesey ...	313	1.60	2.11	11.5	37.2	47.6
Hampshire ...	390	3.29	2.79	17.5	42.5	33.9	Brecknockshire ...	346	3.17	2.92	13.0	34.9	47.0
Wiltshire ...	373	2.66	2.09	15.6	47.4	32.2	Caernarvonshire ...	352	3.45	2.43	11.6	40.8	41.7
Dorsetshire ...	380	3.86	2.72	15.9	40.8	36.7	Cardiganshire ...	336	2.61	2.20	13.3	33.7	48.2
Somersetshire ...	394	4.08	2.97	15.7	40.2	37.0	Carmarthenshire ...	345	1.49	2.01	19.5	40.0	37.2
Devonshire ...	368	3.36	2.81	13.8	42.7	37.4	Denbighshire ...	357	2.51	1.72	18.4	39.8	37.5
Cornwall ...	358	3.01	2.78	13.2	42.1	38.9	Flintshire ...	345	1.65	1.90	21.1	43.8	31.6
MIDLAND and N. MIDLANDS							Glamorganshire ...	363	1.88	2.15	23.2	42.2	30.6
Gloucestershire ...	367	2.42	2.31	19.6	42.1	34.2	Merionethshire ...	322	2.44	1.90	11.6	41.1	43.4
Herefordshire ...	376	4.07	2.76	14.3	41.0	39.7	Monmouthshire ...	357	1.49	1.83	24.3	43.6	28.8
Worcestershire ...	398	2.85	2.77	26.5	36.7	31.2	Montgomeryshire ...	322	2.41	1.90	10.9	38.6	46.3
Warwickshire ...	408	2.80	3.10	29.8	34.4	30.0	Pembrokeshire ...	349	2.69	3.28	14.2	39.5	40.3
							Radnorshire ...	365	2.47	2.80	14.6	34.0	46.0

Comparable data for Scotland and Northern Ireland will be given in the May issue of PROSPECT.

HOME MARKET REGIONAL SURVEYS (cont. from page 37)

near Llwhwr, employing about 1,000 men, will start production of prefabricated houses in April. Sponsor is Concrete Construction (Wales), Ltd., who have for some time been manufacturing and erecting two-bedroom houses in Northern Ireland.

New transport projects include a £1,500,000 shipyard on the River Usk at Newport, Mon., for the production of tankers, and the modernization, in conjunction with British Railways, of the port of Holyhead.

Midlands

Redundancy and short-time working, together with the Austin strike, have made gloomy head-

lines in the last month or so. Particularly badly hit are the cycle trade, the rolling section of the non-ferrous metals section (particularly the Banbury mills of the Northern Aluminium Company), and some sections of the pottery industry. No immediate improvement in the position here can be foreseen.

There is some evidence, however, that the gloom has been overdone. Unemployment, though higher than in recent months, is still well below the national average. Hercules are back on a five-day week. And conditions in the motor industry—a key factor in the regional economy—are improving.

January output of both passen-

ger and commercial vehicles was up. February and March figures will inevitably be affected by the Austin strike, but in other companies the amount of short-time working has been drastically reduced. Sir John Black, deputy chairman and managing director of the Standard Motor Company, announcing an agreement with the Willys-Overland Export Corporation for the production of Willys Jeeps at Coventry, promised better times. The agreement covers not only the production, and sale to European markets of jeeps, but facilities for sale of Standard cars in the U.S. Other motor concerns also seem more cheerful. The next two or three months should show a steady improvement, not

HOME MARKET REGIONAL SURVEYS (concluded)

merely in the motor industry itself, but in the bulk of Black Country engineering.

Recovery in hosiery is well under way, and the story is again one of production to capacity and shortages of labour. Some manufacturers have closed their order-books for the rest of the year. But prospects beyond the immediate future are viewed with caution. Current buying is reported to be largely re-stocking; what happens when the pipelines are full again remains to be seen.

Scotland

The rise in coal prices highlights Scottish developments in hydro-electric power, the effects of which are now markedly affecting the whole regional economy. The North of Scotland Hydro-Electric Board has almost trebled water-power production in the last three years, and has connected more than half the consumers in the North who had no electricity in 1948. During 1952 nearly 20,000 new consumers were connected to the mains. Some 87,000 have yet to be connected, but these are situated in more isolated areas, and the tempo of connection must slacken in the next year or two. But new hydro-electric schemes under construction have a capacity of 287,000-kW, and an output of 82m. units a year. Further schemes are in course of promotion and survey with an output of 1,477m. units. The most important of these, at Breadalbane (Perthshire), has just been approved. Costing £15m., it will have an output of 304m. units a year. Moral: a rapidly developing outlet for all types of electrical appliances and equipment.

That Scotland's need for new capital is even more urgent than that of the rest of Britain is stressed in the latest report of the Clydesdale and North of Scotland Bank. The Scottish Council (Development and Industry) is actively filling the gap. Following its recent sponsorship of the Ferranti electronics industry, the Council is now negotiating for the establishment of a precision engineering industry. Skilled workers and an unsatisfied local demand for jigs, tools and fixtures suggest that prospects are encouraging. Other fields being explored by the Council are the possibility of ex-

panding chemical and non-ferrous metal production.

Shipbuilding is currently doing well. A good number of new ships are under construction, and repair yards report more business. Complaints are still being heard of shortages of steel, particularly of heavy plate, but record outputs from Scottish steel producers should rapidly silence these.

Northern

Tyneside trade is in a healthy state, according to Leslie Mann, committee chairman of the Tyne Improvement Commission. Coal and coke shipments in 1952, at 9,250,000 tons, were 574,000 tons up on the year. Growing home demands were reflected in increased coastal shipping. Losses in coal bunkers are being made up by increased orders for oil bunkers.

Less optimistic is the annual report of the North-East Engineering Bureau. Increasing competition from Germany and Japan is causing many firms to lose orders on price. Some large concerns are no longer working above capacity, which has meant less subcontracting, to the detriment of the smaller firms specializing in

Key Figures in 22 Charts

— see pages 38 and 39

this type of work. Nor does the Bureau see any prospect of substantial improvement in 1953.

This view is endorsed by the biennial review of employment conditions of the North-East Development Association. This forecasts a recovery in the near future, "when the country's economic position has improved even more," but sees "further ahead an uncertain future," especially in shipping, shipbuilding and associated industries. Since the area is still heavily dependent on these industries, a recession would have serious consequences. Redundancies in coal mining, too, are foreseen, particularly in West Durham. Remedy proposed: retention and perhaps even more rigid application of development area policy.

Despite these gloomy prognostications, industry continues to ex-

pand rapidly. New factories on the Team Valley Estate have been approved for Hugh Wood and Co., Ltd. (mining machinery); Square Grip Reinforcement Co., Ltd.; Fusarc, Ltd. (welding equipment); H. Leverton and Co., Ltd. (agricultural machinery); and the Armstrong Cork Co., Ltd. (flooring). The Bristol Aeroplane Co., Ltd., is expanding its activities at Sunderland. Work will begin in June on the new Longbenton (Northumberland) factory for Vickers-Armstrongs, Ltd. (tractors), and progress is being made with the new £1m. iron ore quay at Tyne Dock.

South-Western

Concentration on aviation and armament work has cushioned the engineering industry from the general recession. Unemployment has remained low, and an acute shortage of skilled engineering labour exists. Activities at the Bristol Aeroplane Company remain at a high level; the company now has five products on a "super-priority" basis, the latest being the Olympus turbo-jet engine. A new streamlined version of the Bristol freighter has been produced with increased car and passenger capacity, and orders for six have already been received.

Increased dollar sales for the Bristol car should materialize from an 18,000-mile tour in U.S. by James Watt, sales manager, car division. Car was adjudged "best engineered car in its class" by judges of New York Sports Car Show.

A boom is also reported in pre-fabricated buildings. A Gloucester firm has recently started to export pre-fabricated bungalows to the Middle East; a Devon firm is actively developing a form of construction based on extruded aluminium alloy channels; and Gardiner, Sons and Co., Ltd., of Bristol, are making considerable headway with their framework construction system for schools. A target of £300,000 a year has been set for the firm by the Ministry of Education.

Government de-control of animal feeding-stuffs has given an impetus to agricultural engineering concerns. One Eastville firm, An-doc, Ltd., received an order for £200,000 of battery-laying units within a few days of the Government's decision.

EXPORT MARKET SURVEY

Dollar export figures look healthy in spite of lower February figures. Mr. Butler, returning from his American visit, prophesies better times.

But do not expect any immediate drastic action on tariffs. President Eisenhower thinks tariffs are too high. So do his official advisers. And so does a considerable section of the Republican Party. But an important minority in Congress is still unconvinced.

Mr. Eisenhower's current policy is to avoid controversial legislation—and the tariff question always raises tempers. What can be done to ease imports by purely administrative action will be done—but legislation must wait.

★ ★ ★

Expect new international talks on tariffs next winter on scale of Geneva (1947), Annecy (1949) and Torquay (1950 and 1951). Many countries—including Britain—are worried by Japan's proposed accession to G.A.T.T., and want to discuss implications.

Britain, too, wants to discuss imperial preferences again. The Commonwealth conference changed the picture.

Expected agenda: (a) tariff negotiations with Japan; (b) a fresh round of tariff concessions; and (c) the general review of existing tariff concessions. But even if Japan does join G.A.T.T. (this now seems likely) results will not be rapid. Inclusion will simply allow members to negotiate with Japan under the G.A.T.T. rules. The negotiations themselves will not be easy or short.

★ ★ ★

Export subsidies are on the way out. British trade organizations agree they are futile. Benefit gained is only temporary, and drawback is distortion of the trade pattern.

Other countries are following suit. Norway has dropped its dollar retention scheme. Western Germany is considering doing so. Pressure is growing to persuade other countries to follow suit. An International Monetary Fund re-

port is expected any day on the subject. But the main factor is a marked reduction in the margin between dollar and non-dollar prices.

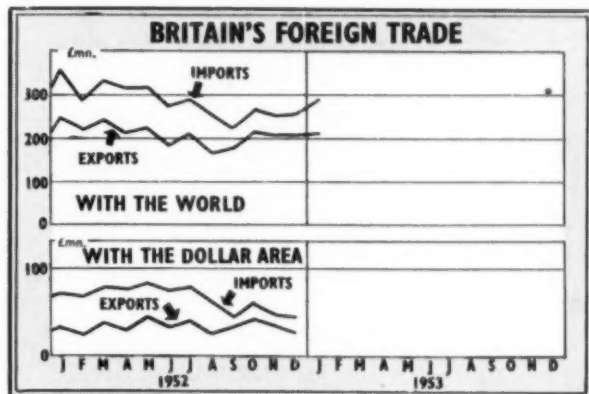
★ ★ ★

The 40 per cent. increase in engineering exports demanded by Mr. Butler seems unlikely to be achieved. Markets are becoming harder, rather than easier. An alarming forecast was made recently by A. W. Grant, chairman of the Engineering and Allied Employers' Association in the West of England. Export markets, he said, had toughened to the point

export opportunities have been seriously affected by Government restrictions of steel for shipment abroad. This has led to serious delay in the execution of several contracts and the cancellation of orders. "Foreign competition has markedly increased, but," he adds, "we have as yet no doubt of our ability to get business overseas."

★ ★ ★

Latin-American trade is in the doldrums. The balance of payments has risen markedly in Britain's favour—but only because the contraction of 50 per cent. in British imports from the region



where every order had to be fought for. General emphasis was no longer on delivery, but on prices.

"At the moment," added Mr. Grant, "unemployment and short time work is largely confined to the car industry, but the same factors have spread to almost every other source of engineering. But for the rearmament programme there would already be tens of thousands of workers unemployed, and, rearmament programme or not, widespread unemployment within the next twelve months is certain to result unless the present trend in exports can be halted and our sales abroad increased."

Other engineering industrialists, however, are not so pessimistic. Sir Ellis Hunter, chairman of Redpath, Brown and Co., Ltd., structural engineers, reports that

has been greater than the shrinkage in sales made to it.

Main causes have been droughts in Argentina and excessively high prices in Brazil, coupled with British import cuts.

Current picture is more promising. Argentina has announced imminent import licences for consumer goods. Brazil's free exchange experiment is working more successfully than had been hoped. Mexico has suspended imports, but this seems to be a purely temporary measure to allow the Government to clean up corruption. When this is done the market should re-open again.

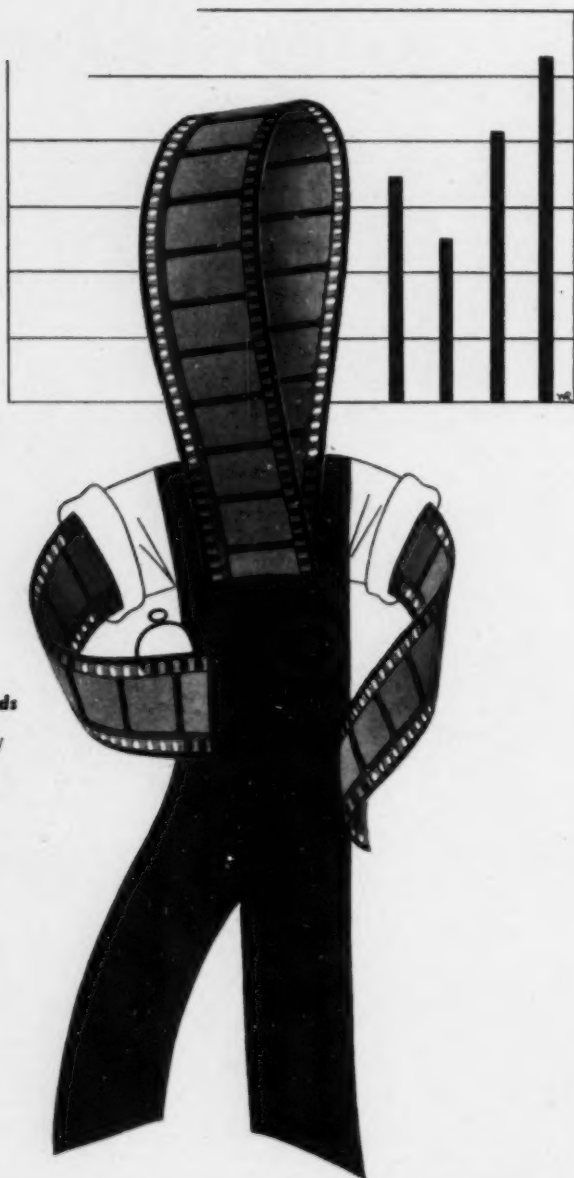
On long-term prospects, the coming of the U.K. mission is expected to spotlight increased opportunities in Venezuela, Columbia, Dominican Republic, Cuba and Mexico.

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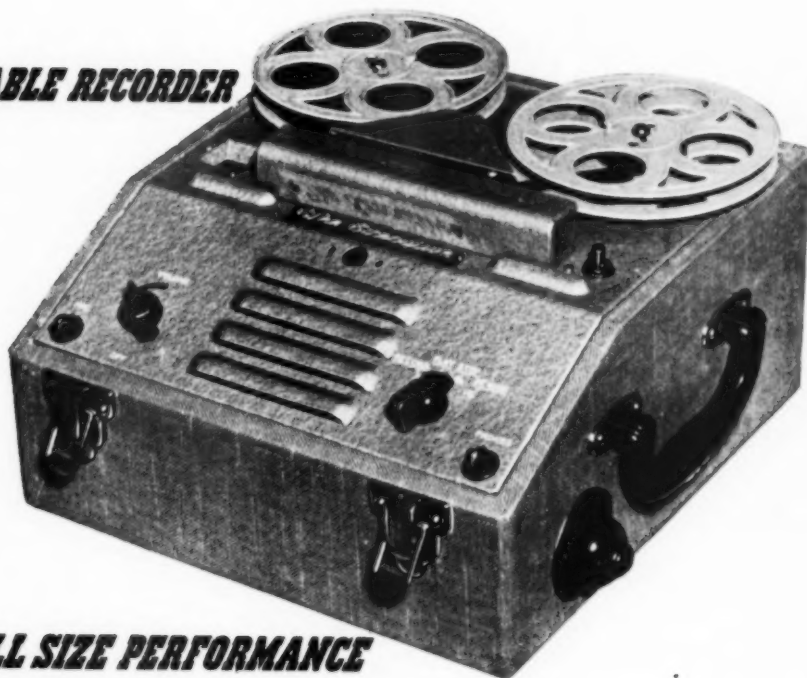
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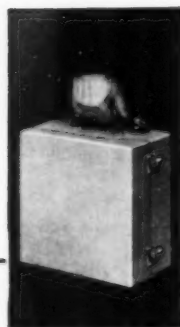
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How fast can your adding-machine operators work?

Speed is not everything. Nevertheless, one of the best tests of an adding-subtracting machine's value to your business is the rate of work per hour an operator can achieve on it.

Some machines are so constructed that the *expert* operator has to go through exactly as many manual movements as the beginner.

Burroughs design theirs on the understanding that the least expensive machine—whatever its purchase price—is the one which enables most work to be completed in the shortest possible time. Using a Burroughs, with the famous short-cut keyboard which enables two or more keys *and* the motor bar to be depressed simultaneously, a skilled operator can work up to an astonishing rate of production.

With office-space and staff-time the price it is today, installing a Burroughs Adding-Subtracting machine (there's a wide choice of capacities and carriages, and they all multiply as well) is a decisive step towards cutting office costs. It's not too soon to call Burroughs *today!*

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Is your office staff obliged to do, manually, work that might be done electrically with much less effort?

Burroughs' publication "Ways to Save Time in an Office" poses—and suggests answers to—many questions like this. If you'd like to have it by you, write to Burroughs at their London address. It will be sent free of charge.

COUNT ON **B**urroughs
FOR ACTION

The MARCH of BUSINESS

"BUSINESS" SPRING CLEANS

WITH this issue, we have given BUSINESS a more than usually vigorous spring clean. To make it easier for the reader to find his way about the larger issue, we have made radical changes in make-up, the full details of which may be gauged from the contents page, which has been moved to page 1. The normal classified index to advertisers appears on page 31, and a new alphabetical index to advertisers on page 136.

The main change is the collation of all our regular equipment features—New for Your Office, Industrial Equipment, Canteen Equipment, and Welfare Equipment—in a single section, starting on page 109. The feature Office Supplies and Accessories has been incorporated in New for Your Office. Readers who are interested in equipment will thus have all their material tidily collected together in the same place each month, while others will be able to read the special articles without interruption. The new arrangement, too, will enable us to make better use of colour to pinpoint vital facts and angles, so that he who has to run may also read.

This month, too, sees the birth of PROSPECT, a new type of economic survey that is, we think, an innovation in British business journalism. Economic surveys exist, to be sure, but they seem to be addressed to businessmen solely as actual or potential investors. But many a businessman wants to know how current events are going to affect his markets rather than his shares (if any). And it is the impact of current events on the day-to-day management problems of producing and selling goods and services that will form the leit-motif of PROSPECT.

Highlight of the first issue of PROSPECT is a new and exclusive county-by-county index of purchasing power, based on official income tax returns. Interesting sidelight is surprisingly high income levels in Oxfordshire and Westmorland.

★ ★ ★

NEW opportunities are open for cinema advertising. Through a new firm, Pearl and Dean, Ltd., more cinemas, including the A.B.C.

circuit, will now show short advertising films between features. In addition to normal 2-minute films and 15-second filmlets, the firm will make 1-minute films in either monochrome or colour, which will be produced and exhibited for 13s. 6d. per 1,000 viewers. Another major development is the first three-dimensional coloured advertising film, produced by another organization, Theatre Publicity, Ltd., for W. D. and H. O. Wills.

★ ★ ★

ELECTRONICS TAKE OVER

ELECTRONIC computers are rapidly percolating down from the university back-rooms into offices and factories in the United States. In the office, the machines are taking over many routine clerical procedures previously handled by slower machines. One New York bank has speeded

up the task of accounting for and endorsing 300,000 cheques (and other items) a day by installing an I.B.M. computer. A Mid-Western electric power and light undertaking has replaced 12 older machines by three I.B.M. computers that are currently preparing 30,000 statements a day. The Eastman Kodak Company has developed an electronic printer which prints 40,000 magazine address strips an hour, and another machine on the market produces 6,000 department store price tags an hour.

In industry, an important development is the use of computers for analysing breakdowns. The Tennessee Valley Authority is using one that can locate and sort out the cause of any breakdown from more than 400 possible causes. Repair work is thus expedited, and the occurrence can be recorded for study to avoid further breakdowns.

Exciting industrial vistas, too, are offered by the Massachusetts

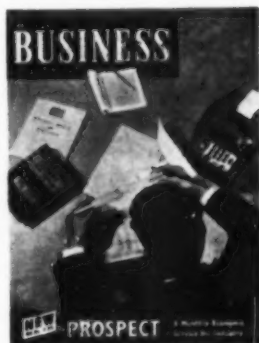
"Business" Looks Forward

BUDGET month is a month from which to look ahead. So BUSINESS this month devotes its main article to a consideration of new developments in business forecasting. Nor do we stop there. To help our readers look ahead month by month we introduce PROSPECT, a survey of trends in business at home and abroad. From the welter of facts and figures that flood each month to every businessman's desk, we sift the short list that are significant for management.

OUR cover picture, specially taken for BUSINESS by F. Dunscombe Honiball, A.R.P.S., shows a member of BUSINESS staff working on PROSPECT. The plywood background was lent by J. Gliksten & Son, Ltd., and the Summa 15 adding-listing machine by British Olivetti, Ltd.

NEXT month, to coincide with the British Industries Fair, BUSINESS discusses export selling. Main article will be a description by J. P. Ford, export manager of the BRUSH-ABOE group, of just how his organization has built up its enormous export business. Other case histories of successful export selling follow. Highlights of office and industrial equipment at Olympia, Earl's Court and Birmingham will also be featured.

FOR CONTENTS
SEE PAGE ONE





THE TEST OF TIME

BLICK Time Recorders have stood the Test of Time because they are :

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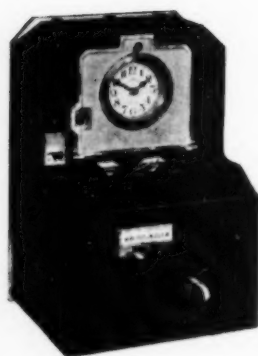
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Write or phone TODAY. Tell us your problem or give us your requirements and we will give you our advice, quotation and full particulars of the Right Model for YOU.

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Blick Model 518

Institute of Technology. They are working on a milling machine controlled by numbers. Instructions on punched tape are fed into an electronic computer, which controls a mechanical system moving the cutting tool of the machine in any desired pattern.

★ ★ ★

CONFERENCE on Human Performance: Its Measurement and Limitations is announced by the Ergonomics Research Society for April 13 to 16 at the Department of Human Anatomy, Oxford University. Papers announced tend to be abstruse (e.g., "Electromyographic investigations during typewriting"), but have a strong industrial bias. Speakers are drawn from Britain, Europe and the U.S.A. This is the 3rd annual conference of the society.

★ ★ ★

£'s FOR PRODUCTIVITY

THE Board of Trade will, in the next two to three years, spend about £3,000,000 in increasing productivity in British industry. The money represents funds arising from the Mutual Security Agency's Economic Aid scheme—successor to Marshall Aid. The money will be spent in six ways:

- (1) To provide an advisory service. Experts will be hired by the Government and their services made available to firms (particularly small firms) anxious to reorganize their management and production techniques either free of charge or at a nominal fee.
- (2) To undertake research. Subjects suggested: incentives in industry and agriculture, effects of restrictive practices, relative efficiency of competitive and monopolistic enterprise. Mechanics: grants to universities, learned societies and organizations such as the British Institute of Management.
- (3) To promote studies, by financing courses in management studies at various educational organizations—including the technological college recently sponsored by the Government.
- (4) On publicity—mainly exhibitions, local conferences and films.
- (5) On loans to industry. A revolving fund of £1,000,000 will be available for short-term loans to industry for reorganization of plant and equipment. Emphasis is on applying recommendations

PEOPLE * PRODUCTS * PLACES



ESSO EXTRA—William E. Jenkins, C.B.E., managing director of the Esso Petroleum Co., Ltd., has concluded a £7 million agreement with the Danish Esso Co. to supply them with between 600,000 and 700,000 tons of petroleum products during 1953. The agreement will earn Britain a substantial quantity of Danish currency, readily convertible into Danish produce.

AIRBORNE DETECTOR—Developed by a Canadian company of the Hunting Group is the type 234 Airborne Radiation Detector, an instrument that can detect radio-activity from the air. Used to assist the search for radio-active deposits, it is so sensitive that 35 millionths of an ounce of radium has been detected from an aircraft flying at 150 m.p.h. and 200ft.



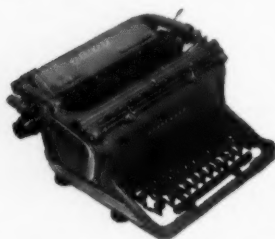
FOR A GOOD TURN—Claimed to be one of the finest copying lathes in use in industry today, this G.F. Profile Lathe is installed at the Stockport works of Mirreles, Bickerton and Day, Ltd. It is employed in turning a very difficult bolt for a diesel engine. The bolt, nearly 7ft. long, is produced to satisfactory finishes and limits in about a quarter of the time taken by an ordinary lathe.

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The new range of Typewriters, Accounting and Adding Machines now being produced at our Brighton Factories are the result of over 50 years' experience and research. They bring to British Business a new speed, flexibility and efficiency of performance to offset the increasing burden of office overheads.



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Underwood Sundstrand Adding Machine



UNDERWOOD SUNDSTRAND AUTOMATIC PORTABLE ACCOUNTING MACHINE

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Underwood Business Machines Ltd.

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Sales and Service Everywhere

of Anglo-American Council's teams.

- (6) On financing a British contribution to a new productivity agency to be established by the Organization for European Economic Co-operation.

★ ★ ★

THE 40th Business Efficiency Exhibition, to be held at Olympia from June 16 to 26, will be opened by Sir Miles Thomas, chairman, B.O.A.C., and ex-president of the Society of Motor Manufacturers and the International Air Transport Association.

B.E.E. organizers are preparing for at least a 50 per cent. increase in overseas buyers as the show opens within a fortnight of the Coronation. Exports of British office equipment have risen to nearly every country in the world since the last B.E.E. held in London in June, 1951. In the past two years, in fact, revenue from shipments to the U.S.A. has gone up by 660 per cent.; to Canada by 109 per cent.; to India by 75 per cent.; to New Zealand by 69 per cent. and to the Netherlands by 45 per cent.

★ ★ ★

NEW SELLING MEDIUM

AS we go to press, a Government White Paper on sponsored television is daily awaited. This will no doubt set the stage for the last act of the drama of "how" and "when" this new advertising medium will become available in this country.

Meanwhile a number of advertising agencies are studying the techniques peculiar to this medium, exploring the talent and technical facilities available in Britain and examining how sponsored television can best be made acceptable to British audiences. One of these agencies is Foote, Cone and Belding, Ltd., who recently gave a most interesting private showing of the first major sponsored television series to be produced in Britain for use in America. Advertisers, officials of organized advertising and B.B.C. television chiefs were among those who saw the show.

The film, lasting half an hour, was one of 39 being sponsored by an American brewery. Each film includes a "built-in" sales message.

Incidentally, the production of these films in Britain is earning dollars as well as providing valuable experience in this medium.

APRIL, 1953

PEOPLE * PRODUCTS * PLACES



EXPANSION—Cyril Lord, 41-year-old chief of Cyril Lord, Ltd., who has bought control of one of his principal rivals—H. Ledgard, makers of Silmyra fabrics. This development will increase Mr. Lord's mills from six to eight, giving him a total of 3,700 looms and 317,000 spindles. A biographical feature on Mr. Lord appeared in the April, 1952, issue of BUSINESS.



FOR CLEAN SCREENS—This radiator-mounted transparent plastic shield is used to deflect rain, dust, snow and insects from the windscreen of a car. Known as the Wirbulator, it is of German manufacture and can be had in different colours—yellow, clear, red, green and blue. Its plough-like design deflects the rush of air upwards and outwards.

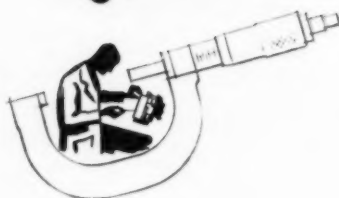


RUBBER BARROW—New development in that commonplace object the wheelbarrow is the version pictured above, which has a rubber body. Produced by Dunlop, Ltd., it is claimed to be lighter and tougher than the standard article. It is also unaffected by acids or alkalis and the contents are less likely to stick to the interior.

DESIGNED FOR SPEED



AND BUILT TO LAST



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*The National Cash Register Company Ltd., 206-216 Marylebone Road, London, N.W.1
and all principal centres.*



New Developments in Business Forecasting

By PHILIP F. DYER
Editor, BUSINESS

BUSINESS forecasting, in some form or other, is as old as business itself. Every transaction, every decision that extends into the future, necessarily involves some estimate of the future demand for goods, the future prices of raw materials or of the finished product, or the future availability or cost of credit.

But forecasting as a separately organized activity in a business is a relatively new development. Today, executives (and particularly company accountants) are showing an increasing interest in organized business forecasting. Evidence of this is a recent survey undertaken by the Controllershship Foundation, the research arm of the Controllers' Institute of the United States, into methods used by 38 U.S. concerns, and the decision of the British Institute of Cost and Works Accountants to devote the whole of its 1953 national cost conference and subsequent discussion sessions to the subject. Noteworthy, too, is a recent series of lectures on "Economic Prediction" by a leading economist, Professor E. A. G. Robinson, and a paper by Professor M. G. Kendall. Business forecasting is in the air.

What, then, can business forecasting offer the businessman?

According to the report of the Controllershship Foundation,* it can:

- 1 form the objective basis of intelligent planning of all future business operations
- 2 ensure the success of a budgetary system
- 3 reduce the area of avoidable risks encountered in every business
- 4 stabilize production and employment by ironing out seasonal variations
- 5 cut labour turnover costs by ensuring greater security of labour
- 6 secure a satisfactory control of stocks at the lowest economic level
- 7 stabilize capital expenditures by securing successful planning of long-term construction programmes
- 8 render the use of standard costs more simple and more accurate by ironing out fluctuations in output.

Not all businesses will, of course, benefit equally from organized forecasting. In some trades—the food industry is a case in point—total demand remains fairly stable from year to year and forecasting

is easy—and unrewarding. In others—for instance, department store retailing—turnover varies widely with the general state of trade; forecasting is difficult (though it can be done), but its contribution can be enormous. But the greatest field for forecasting is certainly the average sort of business, in which demand varies within reasonable limits.

Size and shape of firm are also important factors. The one-man business will get comparatively little out of organized forecasting. It becomes more necessary as a company increases in size, variety of products, number of marketing channels or degree of decentralisation. Particularly in need of forecasting are concerns experiencing violent seasonal or cyclical fluctuations in demand for their products or supplies of their raw materials, even when the firm is small.

Forecasting takes many forms. These may range from the

Hardening business conditions mean greater risks. More than ever before, businessmen must be able to anticipate changes in market conditions and alter their plans accordingly. Hence the revived interest in techniques of business forecasting. To meet this interest, BUSINESS presents a survey of new developments in this field.

*Business Forecasting: A Survey of Business Practices and Methods. Controllershship Foundation, 1950

prediction of general business conditions, total market potentials, and the sales and production volumes of specific industries or groups of industries, down to detailed production schedules of a particular firm, its expense and profits budgets, and the distribution of selling expenses and sales quotas to sales districts. Economic forecasting, commercial and market research are all included in this broad definition.

These various aspects of forecasting fall logically into two main categories: the forecasting of the trend of general business conditions, and the study of conditions within specific industries (external forecasting), and the sales and other forecasts which concern only the specific company (internal forecasting).

External Forecasts

External forecasting uses three methods: the trade cycle method, the national balance sheet method, and econometric models.

The oldest form of external forecasting, the trade cycle method,

has for some years been somewhat under a cloud. It depends, in principle, on finding a recurring pattern in the succession of booms and slumps that have occurred since industry began, and assuming that that pattern will continue to recur in the near future. Unfortunately, no simple pattern has been found. Various more complex patterns have been suggested (the Dow theory and the Harvard business index of the 1920's, for instance). None of these foretold the 1929 crash, so this type of forecasting fell into disrepute. War and post-war conditions of controlled economics, too, were thought by many to have eliminated the trade cycle—an illusion that recent developments in the textile trade may well have shattered.

Since then, however, a good deal of research work has been done and techniques have been improved, firstly by the League of Nations, and later by the National Bureau of Economic Research in the United States. And G. H. Moore, of the National Bureau, has recently devised a system that has proved highly successful in pre-

dicting "turns" in the trade cycle pattern.[†]

Briefly, Mr. Moore's argument is this. All economic data more or less follow the rise and fall of general business conditions. But they do not all turn up or down at a peak or trough of the trade cycle at the same time. History shows that some data tend fairly consistently to "lead" a turning point by a matter of months; others to "lag" behind it. If, therefore, we can choose a number of figures that normally "lead" a turn in the cycle, we shall have a valuable warning of things to come.

21 Variables

After considerable study, Mr. Moore finally chose 21 variables that seemed to have a persistent timing relationship with the turning points in business at both peaks and troughs. They are shown in the table on this page.

To use any single one of these series as an indicator of a coming turn in business conditions would often lead one false. But there is safety in numbers. And any businessman who, from 1913 to 1940, had predicted a coming turn when 50 per cent. of these indicators had already turned would have had a very good forecasting record indeed—and would, incidentally, have avoided being involved in the 1929 crash. Even more significant is the fact that the system, based entirely on pre-war figures, predicted a down-turn in business in September, 1948—which duly occurred.

Mr. Moore's statistical indicators are based on American experience and work in an American context. They may not necessarily be the best indicators for Britain. Some, indeed, are not available. Others—notably figures concerned with foreign trade—are omitted because of their insignificance for the American economy. But the indicators are worth studying, if only because every British boom and slump has been preceded by an American boom or slump. And the way is open

THESE FIGURES SHOW TOMORROW'S TRADE

	Average lead (—) or lag (+) in months	
	Peaks	Troughs
(A) Leading Group		
Business failures, liabilities (inverted)	—10.5	—7.5
Industrial share prices	—6.0	—7.2
New orders, durable goods	—6.9	—4.7
Residential building contracts	—6.2	—4.5
Commercial and industrial building contracts	—5.2	—1.7
Hours worked per week, manufacturing industries	—3.8	—2.6
New incorporations	—2.5	—3.5
Sensitive wholesale prices	—2.6	—3.2
(B) Roughly Coincident Group		
Non-agricultural employment	—0.2	—3.3
Unemployment (inverted)	•	•
Company profits	—1.5	—1.8
Outside bank debits	+ 2.0	—4.3
Freight carloadings	—0.3	—1.3
Industrial production	+ 0.6	—2.2
Gross national product	•	•
Wholesale prices, excluding farm products and food... ..	— 3.5	+ 3.7
(C) Lagging Group		
Personal income	+ 4.0	—2.2
Retail sales	+ 3.8	+ 1.8
Hire purchase debt	+ 5.0	+ 3.5
Bank rates on business loans	+ 5.5	+ 4.8
Manufacturers' stocks	+ 6.5	+ 7.5

* Not available

[†]Statistical Indicators of Cyclical Revivals and Recessions, by G. H. Moore: Occasional Paper No. 31, National Bureau of Economic Research, 1950.

4 STEPS IN FORECASTING

	£m.
Rent of land and buildings	416
Interest and profits, including farming profits and professional earnings ...	3,777
Salaries	7,735
Wages	
Pay and allowances (in cash and kind) of serving members of the armed forces	326

National income 12,254

Food	2,867
Alcoholic beverages	788
Tobacco	801
Rent, rates and water charges	701
Fuel and light	414
Durable household goods	616
Other household goods	125
Clothing	1,046
Books, newspapers and magazines	150
Private motoring	224
Travel	365
Communication services	68
Entertainments	181
Other services	927
Other goods	493
Income in kind of the armed forces	44
Total of above items	9,737
Adjustment ⁽¹⁾	143
Total	9,880

(¹) Tourists' expenditure, etc.

	£m.
Consumption:	
Personal expenditure on consumers' goods and services	9,880
Government current expenditure on goods and services	2,440

Additions to assets:	
Net capital formation at home	2,249
Net lending abroad and purchase of assets and financial claims from overseas	516

Net national expenditure at market value	14,053
Subsidies	464
Less indirect taxes	—2,263

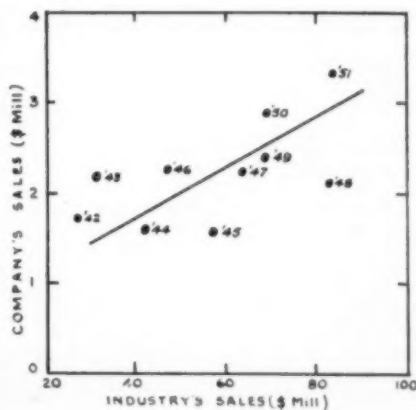
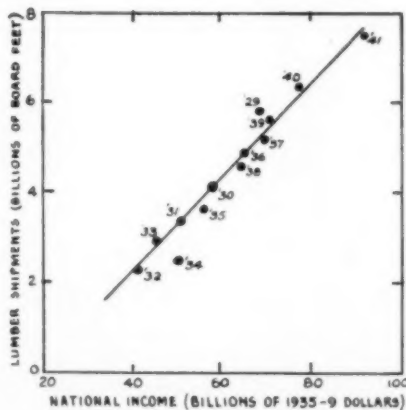
Net national expenditure 12,254

1 Estimate next year's national income and expenditure from previous years' figures. (Figures quoted are for 1951).

2 Estimate expenditure on a particular commodity group from the estimate for total expenditure.

3 Estimate expenditure on any single commodity from expenditure on the commodity group (or from total expenditure if this is not available).

4 Estimate percentage of total expenditure on the commodity likely to be obtained by the individual firm.



Two Industrialists Tell How They Forecast

JOHN RYAN

Vice-chairman, Metal Box Co., Ltd.



WHEN I first started sales forecasting in the Metal Box Company, one of the pieces of statistical information I sought to get was an area sales approach. I asked each of the area managers what they thought they were going to sell next year. One of them came back with what then was, and perhaps still is, only too frequently the approach in industry to these matters, and he said: "How do I know?"

I said to him: "That is too bad. We are really starting in a green field. Suppose I put down a £1,000,000." He said: "Don't be silly: I cannot sell a £1,000,000 worth." I said: "What about £1?" He said: "Well that's just as silly." I said: "Well, at any rate we have got a bracket. What about £100,000?" He said: "No, I couldn't sell £100,000." Then I said: "What about £100, the other end?" He said: "No". I said: "We are getting on nicely." In the end he agreed that he did not think he would sell £50,000, but he thought he would sell more than £45,000. I said: "You knew all the time."

"I have not told you anything. I have just asked you questions. You have told me all I wanted to know—you have given me a ten per cent. margin. That is excellent and all I expected to get at the start. You did not think you knew, but you did. I have merely focused your own attention on this particular knowledge."

SIR CHARLES RENOLD, J.P.

Chairman, Renold & Coventry Chain Co., Ltd.



THERE are two approaches to business forecasting. One concerns the economic climate, the other the complex special conditions which affect your particular business. We now approach the problem from two, or really three sides. We have an "economic survey department" which is concerned with forecasting the general economic climate of the world in which we expect to trade. We have a separate planning department which develops the statistical projection of our experience, and we also produce a survey of our productive capacity.

We thus start off from these three aspects; the economic survey department prepares its report on what it thinks the economic climate is going to be; the planning department presents its statistics showing a background of achievement over several years, projected into the coming year, and the production department reports on its capacity position.

These are the basic data and then comes the criticism. The sales department considers the statistical projections and give their reasons for thinking that they are too conservative or too optimistic. They have then discussions back and forth with the statistical department and the economic survey department. As a result of these, two views generally come up to the managing director in a council meeting in which all the heads of these sections get together.

In a discussion at the 1949 conference of the British Institute of Management.

for research to ascertain just what indicators will work in a British economy.

National Income and Accounting Method

The use of statistical indices of any sort for forecasting has one major shortcoming. Such indices may show a forthcoming change in business conditions—but they will give no indication as to the extent of that change. Another method of forecasting general business conditions, which tries to do this, is a by-product of the

Keynesian school of economics.

It was Lord Keynes who first pointed out the very obvious truth that in the accounts of the nation as a whole, just as in the accounts of a company, every debit must have its credit. Every pound spent by one individual means a pound as income to another.

Thus a "profit and loss" account can be devised for the national economy each year in very similar terms to the profit and loss account of a company. And just as an accountant can, and often does, make a preliminary estimate of next year's profit and loss account,

so, too, the economist can, and does, make an estimate of next year's national account. From this account, a reasoned argument can then be deduced concerning the most likely volume of business both for the community as a whole and for specific industries.

First step is to estimate the gross national product. This is done from the expenditure side. Estimates are made separately for each type of capital goods expenditure likely to be made during the year, by government, by local authority, by nationalized under-

Continued on page 128

HOW TO CUT LOST TIME BY HALF



Absenteeism and bad time-keeping eat into profits. But they can be successfully tackled if a plan of campaign is carefully worked out—and energetically put into practice. Here is a survey of what progressive firms all over the country are doing to cut out lost time in factory and office.

By RICHARD LAWRENCE

MOST businessmen are worried about absenteeism and bad timekeeping among their workers. Those who are not certainly would be if they realized just how much it was costing them in profits.

R. Isherwood, of the Industrial Welfare Division of the Australian Department of Labour, investigated absenteeism in a small engineering firm employing 130 workers. And he found that the direct cost of absenteeism was cutting the firm's profits by £7,284 a year. Some absences were, of course, unavoidable, but if the rate had been only halved, the company's shareholders would have received a bonus of £3,600. Even this figure does not take into account the heavy, but intangible, indirect costs, such as the damage that absenteeism does to the steady, planned work-flow and the inefficiency, slowness and carelessness of the substitute, compared

with the worker who does the job regularly.

Other research workers have confirmed Mr. Isherwood's results. In a report on the cost of absenteeism in America, Benson Laboratories, Inc., assert: "With absenteeism representing an expense factor of \$56.02 (£20), in cash alone, per employee per year, the total cost to American business, on the basis of 60 million employed, is nearly \$3,500 million per year."

An official of a large American motor firm is quoted in a U.S. Department of Labour report as saying that 1 per cent. of absenteeism in the plants reduced production by 2½ per cent.

"If this ratio is general in all types of industry," comments the report, "both the adverse effect on

production and the economic loss are tremendous. Using 4 per cent. as an average figure, this would account for a loss of 10 per cent. of the national production potential. In the steel industry alone, this would result in a loss of 10 to 15 million tons of steel. The expenditure of 3,500 to 4,000 million dollars would be required to build an integrated steel plant capable of producing this amount."

Is this assumption of an average rate of 4 per cent. absenteeism accurate? And even if accurate, is it inevitable?

A survey of 51 factories made by the research board of the Birmingham University Faculty of Commerce and Social Service showed that absence rates varied between 1.3 and 7.1 per cent. for men, with

BLACK TIME RECORDER LTD. Form No. 210.

No. 34

Name J. Summers

Week Ending 26/3 1953

DAY	IN	OUT	IN	OUT	TOTAL
F	7.50	1.00			8
S	8.51	5.00			4
SUN					
M	8.10	1.00			8
TU	8.01	1.00			8
W	8.00	1.25			10
TH	8.02	1.00			8

Ordinary Time... 8.00
Overtime... 8.00
Total Wages... 8.00
Less Nat. Inss... 2.00
Income Tax... 2.00
AMOUNT PAID 4.00

COMPLETE RECORD: Typical time card for working hours of 8 a.m. to 1 p.m. and 2 p.m. to 5.30 p.m. (Fridays, 5 p.m.). "Lates" and overtime after 5.45 are automatically printed in red.

higher rate kept no records of absentees, and had not instituted any programme for their control; the other had established a positive programme to deal with the condition.

The most striking feature of these figures is the extent to which absenteeism can vary from factory to factory. And one of the vital factors that determine the rate of absenteeism in any factory is the vigour and intelligence with which the problem is tackled.

First—the Record

Basic step in the establishment of any programme to reduce absenteeism is, of course, the establishment of a sound record system. Only by such means can management determine, firstly, the extent of the problem, and secondly, the success or failure of the various methods tried to meet it. Moreover, if the programme includes rewards and punishments for individual workers, it is essential to know the records of the workers concerned.

The simplest form of such record is the appointment of a time-keeper, or the provision of a time book in which workers enter their arrival times. But the simplest method is rarely the best. A timekeeper is human and can fall for a pretty face. And workers are human; if one black sheep enters a false time, the 99 white ones will not see why they should be more honest.

Hence the use in most modern factories of an automatic time recorder. Hence, too, the growing use in offices of a similar machine, specifically designed to cope with the smaller number of workers normally involved. Such a machine will automatically produce the record of each worker in respect of absence and lateness. From these time cards can be tabulated a complete record of absences and lateness for the whole staff.

In the simplest form of record, all causes of absence (except recognized holidays) are lumped to-

gether. The absentee rate, expressed as a percentage, is simply:

$$\frac{100 \times \text{total hours lost by all workers}}{\text{total potential or planned man-hours}}$$

The total potential or planned man-hours is obtained simply by multiplying the number of workers by the number of hours in the standard week and adding the number of overtime man-hours actually worked.

But simply to know a firm's absentee rate from all causes is a per cent. will not be of much help. What management want to know is, firstly, how Bill Smith's rate compares with that of Tom Jones, and secondly, just why Bill Smith has been absent so much. For most of the time lost in any business is lost by only 25 to 30 per cent. of the workers. And it is on this minority that management must concentrate its attention.

The simplest form of individual record can be kept on loose sheets of lined double foolscap. This will give both the time lost for each day by each worker and a cumulative total over as long a period as desired, while the reason for absence can be annotated beside each figure. Seven causes of absenteeism are generally recognized:—

- CS Certified sickness.
- US Uncertified sickness.
- II Industrial injuries.
- AL Authorised leave (other than recognised holidays).
- E Unauthorised absence with reasonable excuse.
- WE Unauthorised absence without reasonable excuse.
- UL Lateness (i.e., absence of less than one hour).
- NK Reason unknown.

Once a simple record of this type has been established, it may be analyzed in quite a number of different ways. The complexity of the analysis will depend on the acuteness of the problem and the size of the firm. In a small firm with good relations, a mere occasional glance at the primary record may be all that is necessary. In a large organization, the personnel department may be called upon to supply a detailed daily return to management on a pre-printed form.

With satisfactory records established, management can take stock of the position and, if necessary, introduce a programme to reduce its rate of absenteeism. Such programmes fall into five main sections: (1) Deterrents; (2) Incen-

an average of 4.6 per cent. in 1947 and 3.9 per cent. in 1948. For full-time women workers, absence rates varied between 2.3 and 13.8 per cent., with an average of 7.8 per cent. in 1947 and 6.5 per cent. in 1948. For part-time women workers, they ranged from 6.6 to 19.8 per cent., with an average of 14.9 per cent. in 1947 and 12.8 per cent. in 1948.

A study of 16 medium-sized concerns in the United States showed that seven, with systematic programmes for tackling the absentee problem, had an absentee rate of 4.4 per cent. The other nine, without such programmes, had a rate of 8.1 per cent.

Of two aircraft companies in the same community, producing identical products under the same conditions, one had an absentee rate exactly double that of the other. The factory with the

tives; (3) Propaganda; (4) Improvements in conditions; (5) improvements in job methods.

Some methods under the first three of these headings are considered below:

Deterrents in Factories

Cash Deterrents: The simplest form is one in which the worker, if more than (usually) two minutes late, loses a quarter of an hour's pay.

This, however, cannot easily be applied to workers paid on a weekly basis, or on piece rates. To some workers, too, the prospect of losing 15 minutes' pay (less income tax), or even a whole day's pay, is not so strong a deterrent as might be supposed.

In another form, no overtime is paid on the first 44 hours actually worked; after that, time-and-a-third is paid from 44 to 52 hours; over 52 hours, double time is paid.

Two-Colour Time Recorders: If a time recorder is installed which automatically prints all "lates" in red, workers do not like having a "red" on their cards and will make extra efforts to be in on time to avoid it.

Interviews: One of the most effective forms of deterrent is to interview every absentee as soon as possible after his return. A common method of ensuring that this is always done—and if it is done at all, it should be done *always*—is to check up every day on the time cards in the racks; to remove the cards of all who are not yet in, and to substitute a special red card on which is

printed: "Report to immediately you get in."

The interview should not take the form of a "rocket," but should aim at trying to find out the *real* cause of the lateness or absence—as it may be possible to remove the cause and so prevent repetitions.

Written Excuses: Some firms instruct the timekeeper to check up the card racks immediately on the expiry of the permitted "minutes of grace," remove the time cards of all those not in, and substitute a red card, on which is written: "Write your reason for being late, and sign in the space provided below, and then hand this card in to the Time Office, who will then return your proper Time Card."

Signature

Locking Out: In earlier days, many firms closed their doors at a stated number of minutes after the whistle had blown, and all "lates" automatically lost half-a-day's pay. This is, however, regarded by most firms to-day as uneconomic and liable to create resentment, which may be paid off in other ways—to the employers' eventual detriment.

Suspension: Some employers allow eight "lates" a year. After the sixth, the late-comer is interviewed and warned. After the seventh, he is again interviewed and this time warned in writing. After the eighth, he is suspended for half-a-day.

Deterrents in Office

In some offices, a quarter of an hour's pay is deducted if the "minutes late" total more than 10 in any week. In others, all



FOR OFFICES: In this type of time recorder, personal signature is used.

workers who arrive more than five minutes late are interviewed by the office manager. The written excuse method used in factories can also be applied in offices.

A widely-used method, particularly in small offices, is to prepare a "Weekly Attendance Slip" for each worker. The manager makes a short comment on each slip—such as "Thank you" in the case of all employees with a perfect record.

If it is known that a careful record is kept of each employee's time-keeping, and that this record is taken into account whenever questions of promotion or increases in pay are under discussion, that often acts as a strong deterrent.

Incentives

Many modern employers believe that better results can be obtained by adopting, in addition to deterrents, a more positive approach to the problem by giving some form of positive encouragement to those who do not offend.

A word of warning must, however, be given. About 70 per cent. of employees are very good timekeepers, and the scale of rewards must therefore not be too lavish.

Good Time-keeping Prizes: Each quarter, every worker with a

12 Ways to Cut Lost Time

● DETERRENTS

1. All workers more than two minutes late lose quarter of an hour's pay
2. Two-colour time recorders pinpoint all late arrivals in red
3. All absentees interviewed as soon as possible after their return
4. Insist on written excuses for late arrival
5. Suspend persistent late arrivals after preliminary warnings

● INCENTIVES

1. Award quarterly prizes for good timekeeping
2. Limit participation in production bonuses to good timekeepers
3. Allow extra time off at convenient times (e.g., Saturday mornings)
4. Award group prizes (e.g., by department) for best timekeeping record
5. Run a lottery prize open to good timekeepers only

● PROPAGANDA

1. Write to all workers with a perfect timekeeping record, thanking them
2. Use notice boards to stress importance of good timekeeping

Director's Office of the Month



KENNETH F. PRICE

Builder and Engineering Contractor

● This outstanding Office of the Month belongs to Kenneth F. Price, partner in the firm of Charles R. Price, building and engineering contractors. It was designed by E. Brian O'Rourke, A.R.A., F.R.I.B.A., who was responsible for the whole of the office building in which it is situated: and it was made and furnished in the firm's own joinery works, where a great deal of panelling and special furniture is produced to architects' designs.

● Mr. Price's room had to fulfil several functions. Writing desk and drawing table had to be equally convenient for access to the telephone and inter-communication system, and it was important that they should also be suitable for the accommodation of contract meetings. A desk surrounding the executive seemed the best solution: this is the basis of the design shown in the picture. The inter-communication equipment is centrally placed, and the desk is supported on a central spine wall which enables a number of people to sit round the projecting conference end. Desk, pedestal, bookcase and cupboards are all in French walnut, with a continuous top in beige linet Formica.

● The walls are papered in Sanderson's terra cotta wallpaper. Curtains and chair coverings are in navy and white fabric. The acoustic Celotex tile ceiling and deep pile mushroom-coloured carpet make it a very quiet room: even the staff location system is by coloured lights to avoid the distraction of a loudspeaker.



HE KEPT BRITISH EXPORTS IN FRONT



CHARLES GILBERT SMITH

Still likes a "blind" on a bike...

The Man Who Made Speed His Business

By FRANK G. CASEY

ONE morning, in the early days of the first world war, an artisan's early-vintage motor cycle broke down on a main road outside Birmingham. Watching his impatient antics as he tinkered with the machine was a schoolboy named Smith, who lived near-by.

At last, the exasperated motor cyclist asked young Smith where he could park his obstinate machine until after work that evening. "You can leave it at our house," was the prompt reply. Thanking him, the motor cyclist remarked, "If you can get it going I don't mind you taking it for a spin."

Without any knowledge or experience of motor cycles (he did not even have a driving licence), young Smith soon set to work and got the machine going—and what a day he had!

Reluctantly, he saw the machine go when its owner called for it the same evening—delighted that it was now in working order. The man little realized what the results of the incident would be. For Smith's interest had been aroused. From then on, he thought and dreamed of motor cycles every day. His school books (which he still has) bear witness to this absorbing interest, for their pages are decorated with sketches of racing motor cycles—which even have his name on the tank.

At the end of his last term at Waverley Grammar School, Bir-

mingham, Smith heard that there was a job going at Nortons. He had already made up his mind that motor cycling was in his blood and that one day he himself would make machines. Without hesitation, therefore (although he had not yet had his holidays), he applied for the job, got it, and became an office-boy in the firm which James L. Norton had founded in 1898.

Mr. Norton was a pioneer among motor cycle designers. It was he who introduced the present type of low frame and rational riding position. His first production model, the *Energette*, embodied many of the principles of design that are standardized throughout the industry today. From this machine have been evolved all the famous subsequent Nortons. Even in 1902, these machines were winning races and setting up records; in 1907, a Norton won the twin-cylinder class of the first Tourist Trophy race by a

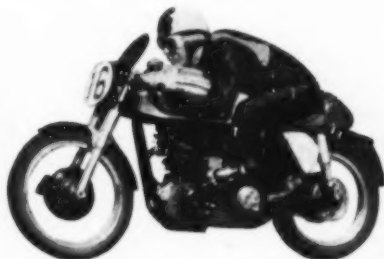
margin of no less than 33 minutes.

When young Charles Gilbert Smith joined the firm, the foundations of the racing policy had already been laid. Norton's growing reputation was therefore just what was needed to confirm and direct his boyish enthusiasm.

While he worked at his first job in the works' manager's office, the new junior was studying, part-time, at Birmingham Technical College. As his engineering training progressed and he gained in knowledge and experience, he was moved from department to department. The drawing and sales offices and the machine shops were some of the places where the now-qualified Mr. Smith learned all sides of the business of making, racing and selling quality motor cycles.

In 1924, Mr. Norton died. His last public appearance was at a civic reception given by the Lord Mayor of Birmingham to the Norton riders who had won the T.T.

When Charles Gilbert Smith was 16 and still at school he decided to become a motor cycle manufacturer. His first job was at Norton Motors, Ltd. Less than ten years later, he was elected to the board, and since 1945 he has been managing director. During his 36 years with Norton's, the firm has grown enormously in size and prestige—thanks largely to the "racing policy" which he has pursued so energetically.





ROYAL INTEREST : Mr. Gilbert Smith shows some of the Norton trophies to the Duke of Edinburgh at the motor cycle show

Picture courtesy of "Motor Cycling"



rides in the Isle of Man that year.

From that time onwards, Mr. Smith began to play an increasingly important part in the company's affairs. In 1926—when he was still only 26—he was elected to the board.

Those boyhood dreams were coming true with a vengeance. But they did not lose their glamour as they materialized. Mr. Smith, the busy executive, still found time for thousands of miles of motor cycling every year, and still enjoyed a fast "blind"—a thrill which, he claims, only a motor cycle can give. Although he continued to take an active interest in all aspects of the business—buying, production, selling and development—it was the last two that chiefly concerned him.

Why Racing? []

Ever since he had been with Norton's, Mr. Smith had been an enthusiastic exponent of the racing policy, and this not only because he himself was keen on racing. He looked on it as a valuable—indeed, essential—part of the business of both developing and selling the firm's products.

"Without question, the finest method of getting the best machines from the design, reliability and safety viewpoints is to race them," he declares emphatically. "Road conditions can never be simulated in the laboratory or works. We regard our riders first and foremost as technicians, and the courses over which they race are the laboratories, in which new developments are tested in the

most practical way. The racing motor cycles themselves are the instruments of research."

How is this contention borne out in practice? Have the large sums spent on research and racing benefited the customer as well as the firm? Mr. Smith's answer is unequivocal. "Most of the improvements in comfort, efficiency and road-holding on the modern motor cycle have come about as the result of racing," he says.

One example is the telescopic fork, now employed on most types of motor cycle, and evolved and perfected in road races. Nortons were using this device on their racing machines before the war. The need to save weight when racing has led to the much increased use of light alloy components in standard machines. It is the same story for suspensions, brakes, tyres, chains, seats, magnetos and other electrical equipment. Everything on the motor cycle, down to the alloy steels used, is severely stressed by road racing, and its lessons not only apply to the machines themselves, but all accessory equipment.

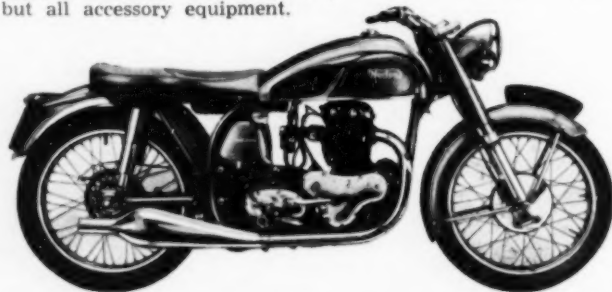
So much for "improving the breed." But the policy has just as great an effect on the selling of standard machines. A victory, in a Tourist Trophy race particularly, is reported in virtually every newspaper in the world, as well as in the trade papers and those run for enthusiasts. To the winner goes literally hundreds of thousands of pounds' worth of free publicity. Conversely, however, a failure can do the manufacturer much harm; hence the fierceness of the competition.

When he came to the board, therefore, Mr. Smith continued to pursue the racing policy of Mr. Norton with vigour—and success. These victories in international competitions brought the young Norton director into prominence in the industry as a whole. He was asked to serve on many official bodies, such as the British Cycle and Motor Cycle Manufacturers' and Traders' Union. He has been a member of this body's Management Committee and Council for 21 years, and its President for four years (when he was elected to this office in 1938 he was the youngest man ever to have held it). He has long been known as a forthright spokesman for the industry, and has represented it on such bodies as the F.B.I and the British Standards Institution.

"My Own Choice"

Apart from these activities (all within his own industry), Mr. Smith has kept himself clear of commitments. Norton's is his one business interest—indeed, his one interest, for he has no hobbies. "Work is my hobby," he declares

RACE-BRED : Export model of the Norton "Dominator", particularly in demand in America and Australia.



with his "Brummagem" accent.

In his case, this declaration does not repel as so often it does. The reason is implicit in Mr. Smith's own words: "I chose my career carefully, making sure that my interest in motor cycling was not just a passing schoolboy fancy. I set out to be a motor cycle manufacturer, and now that I am one I have kept my enthusiasm for all aspects of motor cycling. I love my work—so why should I need another hobby?"

21 Years' Record

During the depressed and depressing days of the 'thirties, Norton's went from strength to strength in the racing world. These successes undoubtedly helped them greatly in those difficult times. In the 21 years that have passed since 1931, no British machine other than a Norton has won the Senior T.T. race.

When the war came, racing activities ceased and Norton's, like everyone else, turned over to war production. In 1939, the firm were the sole suppliers of motor cycles to the War Office—further fruits of racing success. In the years 1939 to 1945, approximately 100,000 machines were supplied to the British and Dominion governments. In addition, the firm produced vast quantities of tools, aircraft parts and ammunition.

At the end of the war, C. Gilbert Smith, now 45 years old, was elected managing director—and Norton's entered on a new era of success in both racing and selling spheres.

The crying need was for more exports, so Mr. Smith himself set out on tours of world markets. He believes in personal contacts between men at the top as the best method of creating goodwill, understanding and confidence in a product.

Even before the war, Norton machines had been sold in every part of the world, but efforts were now intensified everywhere. Orders were obtained from police forces in a number of countries. India and South Africa were two examples. There, Mr. Smith personally visited the police forces, talked to the people concerned, and arranged demonstrations. There were Norton agents in both countries (as in most others), but the firm's view is that agents are

not just appointed and left to get on with it. They are kept up to the mark, supported in their efforts and impressed with Norton standards of quality by constant visits from the men at the top.

In 1947, Mr. Smith visited the United States and Canada. He covered 15,000 miles in four weeks, visiting dealers and agents and appointing new ones. One result of this activity is that whereas there was only one Norton dealer in North America before the war, there are now 36.

A major factor in breaking into these dollar markets was the success achieved in the famous Daytona races. This was a gallant achievement, for the dice are heavily loaded against foreign machines by the American com-



LEADING AGAIN:
Norton rider H. R.
Armstrong, winner
of the 1952
Senior Tourist
Trophy in action

Picture courtesy of
"The Motor Cycle"

petition rules. Nevertheless, at their first attempt Norton's won the 100-mile amateur race and came second in the professional event. American private-owner riders were used, for the publicity value of the successes would not have been nearly so great if Norton's had sent their own crack team.

60 Per Cent Exports

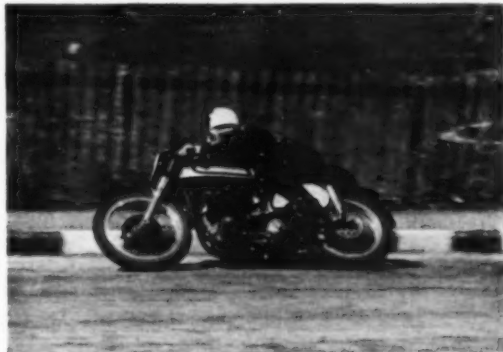
As a result of these intensive efforts, 60 per cent. of output now goes overseas, and exports have been doubled since the war.

In the course of the years during which he has been directing the fortunes of his firm, Mr. Smith has developed (naturally for him) definite views on management and leadership. He has a strong sense of his own duties and responsibilities, and makes a point of never asking or expecting anyone to do

anything which he himself would not, or does not, do.

"The head of a business should set an example to his workpeople," he says—and an ounce of example, he adds, is worth a ton of precept. He himself arrives at the works at the same time as his staff. He spends the first hour or so going through the entire mail of the company, which amounts to between 250 and 300 pieces daily. In this way, he feels he really has his fingers on the pulse of his business.

Mr. Smith's office betrays something of his character: dour, but friendly; practical, yet pleasant. There are armchairs for visitors, the windows are double-glazed to keep out street noises. In one corner stands a cabinet containing over fifty replicas of the Tourist

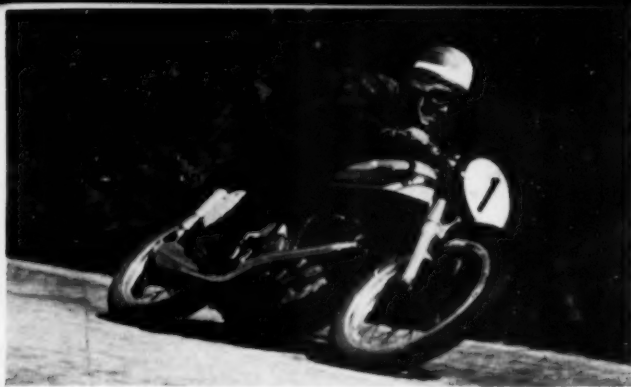


Trophy, presented to winners and runners-up as permanent records of their successes.

On the walls are the colourful certificates of the international body (the F.I.C.M.) which controls all racing outside the U.S.A. Among them is that for 1951, when Norton machines won the world championship in the 350 c.c., 500 c.c. and side-car classes—an astonishing feat, for the championship is awarded on the results of all the major Grand Prix races during any year. Norton swept the board.

The only other decorations of the office are a framed telegram from the Duke of Edinburgh congratulating Mr. Smith on the Daytona victories and a beautiful model of a Norton.

Witness to his active interest in technical developments are the odd pieces of equipment lying in corners—here a racing seat, there



NORTON TRADITION
went to the making
of man and machine:
Geoff Duke riding to
victory in the 1952
Junior Tourist Trophy

Picture courtesy of
"The Motor Cycle"

a casting, under the table an electric horn. The firm use a slogan in their advertisement: "The unapproachable Norton," it reads. However true it may be of their machines, it certainly is not true of their managing director.

Mr. Smith follows an open door policy. Any one of his 1,100 employees can come to see him and is known personally to him. He prides himself on seeing their point of view; but this, he says, is not enough—the head of a business must also care about the point of view of his workers and must let them know that he cares. If evidence were needed to support this view, it could be provided by the relations that exist between management and workers at Norton's. There has never been a strike. Workers are encouraged to join their appropriate trade unions, and, in fact, about 90 per cent. are union members.

The large number of employees who have been at Norton's for 30 or 40 years speaks volumes for the success of Mr. Smith in practising his philosophy of management. Among the most important of them are the members of the works' team. Many famous riders have ridden Nortons, and many a reputation has been made on these machines. Fred Frith, Harold Daniell, Artie Bell, and (of course) young Geoffrey Duke have all been members of the Norton team.

In his second season after being promoted to the team, Geoffrey Duke became double world champion for 1951, was acclaimed British Sportsman of the Year, and was awarded the Segrave trophy for the "most meritorious performance on land, sea or air." He was the first motor cyclist ever to win this award. Yet young Duke came to Norton's as a trials rider, and the encouragement and help he got allowed his natural brilliance to develop. If Norton's have

been fortunate in their riders, so, too, have the riders been fortunate in their machines.

What are the reasons for the remarkable and sustained victories by Norton machines? There is not, of course, a simple answer to this question. But probably the greatest single factor has been the men that have contributed their genius, skill and sweat to the production of one thoroughbred racer after another. Much of the credit for the ability to attract, pick and hold men of the right type and calibre must go to Mr. Smith.

Having got the men, it was just as important to give them the right atmosphere in which to produce their best work. A tremendous team spirit pervades the whole Norton organization. The races mean a great deal to all the workers, and everyone is immensely proud of the company's achievements.

When the machines are being prepared for racing, last-minute modifications often entail much overtime. Often work has gone on feverishly all through the night to get them ready in time. Only the magnificent team spirit of the workpeople makes that sort of thing possible. The fact that Mr. Smith will, and frequently does, stay there with them until the job is finished is an obvious encouragement.

Research Work

Of course, a good deal of Norton's racing success has resulted from their having a definite and whole-hearted racing policy. Given this, money is made available for research and development work on a generous scale. The latest equipment and machinery is purchased, and the research workers are allowed the freedom so essential to them.

Then there is the fact that a

sound basis of design was laid down by the founder—himself an engineering genius. His successors, some of whom he trained, have held to the course he set.

The strain of keeping up a reputation such as Norton machines have won is enormous—and it bears most heavily on the managing director. But Mr. Smith is fortified by his very genuine beliefs about motor cycles and motor cycling. It gives him real pleasure to meet a man riding his motor cycle combination, with his wife and children on board, enjoying the country air at the week-end. Motor cycling is largely the "poor man's" means of transport, and this is one of the things that makes the effort to produce better and better machines so worthwhile.

Another spur to Mr. Smith and his team is the knowledge that their successes on the tracks of the world reflect great credit on this country. Many a time the Norton machine has stood between Great Britain and defeat in the international road races. Every manufacturer acknowledges that he has been helped, especially in the export markets, by the Norton successes.

"No Change"

Mr. Smith believes that the prestige gained from victories in sporting events can help a nation in its dealings with other countries. That is one reason why he feels disappointed that the increasing competition from state-backed German and Italian machines has to be met entirely from the firm's own resources. They even have to pay purchase tax on the machines they take abroad to race!

Last month, considerable prominence was given in the Press to the fact that Associated Motor Cycles, Ltd., makers of A.J.S. and Matchless machines, had bought out Norton's. There was some speculation as to whether this would mean an end of the Norton racing victories. But, in the words of Mr. Smith, "No change of any kind, either in the organization, management or policy of our firm is implied by this deal." Death duties have been responsible for the transaction, which is purely financial, and competition between Norton and A.J.S. will be keener than ever, if anything, in the future.

MANAGEMENT *at* WORK

CONSULTATION LINKS

SEVEN elements in successful joint consultation were laid down by Sir Charles Renold, J.P., chairman, the Renold and Coventry Chain Co., Ltd., recently. They are:

- (1) It is an indispensable condition of happy relations in industry that the people engaged in it should feel they count as individuals.
- (2) It is in the domestic relations within the individual establishment that this has the greatest significance.
- (3) Within the establishment there are two lines of approach to making people feel that they count. These are—
 - (a) Good leadership acting through the normal chain of command
 - (b) Devices of joint consultation cutting across the line.
- (4) The first of these is fundamental; the second, whilst having a vital contribution to make, is supplementary and must be so devised and so handled as not to weaken the first.
- (5) Communications up and down the chain of command must be even more highly developed and effective than might be necessary were joint consultation not attempted.
- (6) Consultation must be about things that matter.
- (7) Joint consultation, stressing as it should the community of interests within the establishment, should not attempt to substitute establishment loyalty for trade union loyalty. There is scope for both.

Sir Charles was giving the opening lecture in a series on human relations in industry organized by the Birmingham College of Technology in association with local management organizations.

CASH IS HARDER NOW

MOST smaller firms today are hard put to it to find the cash to finance their day-to-day business. Many would find it easier if they economized their demands for cash. A three-point programme in this direction has been outlined by W. R. L. Warnock, a director of the

Charterhouse Industrial Development Co., Ltd.

- (1) *Pay creditors promptly.* The slow payer, even if reliable, is made in one form or another to pay for the uncovenanted credit he filches.
- (2) *Render invoices and statements to debtors promptly.* Make it quite clear that you expect to be paid in your time and not theirs.
- (3) *Economize in stocks—the biggest "sink for money" in any business.* Make certain that reasonable care is necessarily taken to avoid, for instance, re-ordering items already in stock but buried either physically or under inefficient paper work. Do not be over-optimistic about material delivery dates; plan production programmes towards the probable date at which the scarcest items concerned will arrive in the factory. It is speed through the factory which results in economies of costs and of working capital. Speed in acquiring unbalanced stocks wastes both. And, finally, avoid detail design differences which multiply items of stock without improving end products.

Mr. Warnock was speaking at a Leamington Spa conference for small firms organized jointly by the Midland area of the National Union of Manufacturers and the Institute of Industrial Administration's Birmingham centre.

WATCH THAT SEASON

WAR-TIME shortages annihilated seasonal buying habits. Now they are back. According to L. P. Lord, managing director of the British Motor Corporation, Ltd., even the motor trade is now seasonal again.

But "seasonalism," if carried to excess, is a bad thing for the selling business. So L. W. Desbrow, of the S. T. Garland Advertising Service, Ltd., told a meeting of the British Sales Promotion Association. And much of it, he said, is due to ignorance and prejudice.

One example is the August superstition or the holiday fallacy. Research has shown that, in any given year, half the population of

this country do not go away for a holiday at all; and of those who do, only one-half are away during August. With the average length of holiday at 10½ days, it follows that the average percentage of the population on holiday at the peak period at the beginning of August is no more than 7 per cent., and this figure will drop away to about 3 per cent. by the end of the month. Moral: there is little reason why anybody who normally advertises in June and July should not advertise in August.

Another example of rigid thinking is the "Back to School" events



L. W. DESBROW

From him, deflating facts on "seasonalism" in sales

in department stores. Timed chiefly for the parents of the 2 per cent. of children who go to boarding school, they disregard the fact that parents of day-school children are a much more significant factor in the purchase of children's clothing.

THE ROAD UP IS STEEP

MUCH has been heard of the need for graduates in industry—and of the possibilities open to them. A more realistic approach is that of A. G. Grant, of Whessoe, Ltd.

"In my company of 1,500 employees," he says, "there are only 80 posts which require and give scope for the sort of qualities and abilities we expect to find in the graduate. Of these, some 30 are today filled by graduates. The other 50 are filled by men who served a traditional apprenticeship

—and most of them are first class." Of the eighty posts concerned, five are in higher management, 11 in departmental management, 22 in various senior technical and administrative levels, and 48 demand individual ability and initiative predominate but offer little scope for group leadership. These figures, as Mr. Grant points out, are in almost geometric progression of 1, 2, 4, 8.

"This geometric progression exists in all industry and in most other human activities," he adds. "It means that a man at one level has only one chance in two of reaching the next and that a graduate entering a firm has only one chance in eight of reaching higher management."

In the case of Whessoe, the problem is complicated by the fact that, some 15 years ago, a batch of men in the early 30's were appointed to departmental management. "Once youth has been promoted, then prospects for the younger men become dim. In our case, it is unlikely that there will be a new appointment in the higher management and in the departmental management ranks for 10 to 15 years," comments Mr. Grant.

For all that, Whessoe does much for its graduates. "We can and do offer a graduate worthwhile work and opportunities to gain experience, and an atmosphere in which he can test and prove himself," says Mr. Grant.

"We operate a graduate apprenticeship scheme—but we are not at all convinced that it is right to separate graduates into two classes—those who spend two years as graduate apprentices and those who take direct appointments to do work."

Since the company cannot offer long-term prospects of promotion, they impress on the graduate that he is not entering the company for life, but rather that he is entering industry. If he is good, he will be considered for promotion when vacancies occur. But if he decides that he should move to another company to obtain wider experience or to obtain a more senior post, he is given all possible help.

"We dislike the 'cradle-to-grave' atmosphere that is creeping into industry—the thought that once he has entered a particular company the graduate is there for life, and must look to that company to give him the promotion he hopes to

obtain," says Mr. Grant. "We believe this produces narrowness and parochialism and too high a regard for permanence and security. The enterprising management that industry needs most comes from adventure and variety of experience."

Mr. Grant's views are quoted in the report of a conference of representatives of industry and the universities organized by the Federation of British Industries and the Committee of Vice-Chancellors and Principals of the Universities of the United Kingdom. The report is published (5s.) by the F.B.I.

CHECKING THE POST

MOST businessmen are reticent about their direct mail methods and results. Not so A. W. Murrell, advertising and sales promotion manager of Remington Rand, Ltd.

Mr. Murrell told a meeting of the British Direct Mail Advertising Association recently just how he sent out 120,000 letters to a mailing list of 10,000 large concerns. They were sent out in three "shots" directed specifically to managing directors, chief accountants and works and sales managers. Another three-shot campaign was addressed to the managing direc-



A. W. MURRELL

Three shots in his mailing locker

tors of 15,000 smaller concerns. Including additional mailings, the total overall despatch was approximately 150,000 letters.

Replies received totalled 1,600—not a large number, but better than the 1 per cent. normally regarded as satisfactory when equipment involving a sizeable investment was advertised. And the

replies all came from "serious sources."

Highest number of replies came from accountants (4.8 per cent.), followed by works managers (4 per cent.), sales managers (2.8 per cent.), managing directors of large concerns (2.7 per cent.), and managing directors of smaller concerns (2.4 per cent.). These percentages were calculated in relation to the number of letters received by each category.

QUALITY CONTROL

PRACTICALLY all finishing and many important operations in American firms visited by the specialist team on inspection methods in industry were controlled by statistical control charts—with "excellent results." So, at any rate, states the report of the team sent out by the Anglo-American Council on Productivity under the leadership of L. Sollis, managing director, Highfield Gear and Engineering Co., Ltd.

One engineering concern, on precision work, had entirely eliminated selective fits, though before quality control was used the production department had continually pressed for wider tolerances. Now operatives were using information supplied by the control charts to reduce variation to a degree previously not thought possible.

Use of quality control was by no means confined to engineering. Other applications included the control of forging weight, the saving of rubber by controlling to specification weight in a tyre factory, and the control of errors in invoicing and stores departments.

The report (British Productivity Council, 3s.) sums up six points for getting the best out of quality control:—

- (1) Give the scheme your backing—and make it clear that everybody must co-operate
- (2) Do not expect quick results
- (3) Be prepared to improve equipment when the charts show this to be necessary
- (4) Regard the production foreman as an "action man" to watch the charts and act quickly when necessary
- (5) Provide enough well-informed staff to organize and introduce the scheme
- (6) Do not use statistical control where some other method is more suitable.



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FACTORY CONSTRUCTION TODAY (3)

Interior of Sigmund Pump Factory, showing excellent daylighting given by the B.R.S. (Building Research Station) monitor roof

Architects: Yorke, Rosenberg and Mardall

HOW LIGHTING AND COLOUR CAN AID PRODUCTION



In the majority of old industrial buildings—and in many new ones—better lighting and correct use of colour would give direct results in higher productivity, as well as improving health and safety. This article shows how modern technique can be applied both to the new factory at the design stage and, more widely, to the improvement of existing buildings.

IN the past, little consideration has been given to the problems of lighting and colour in industrial buildings, and as a result many factories are drab and dreary. In recent years, factory owners and designers have, however, become aware of the fact that well-lit and cheerful surroundings improve the morale of workers and play an important part in increasing output, reducing strain and maintaining high quality.

The science of the natural lighting of buildings is still a comparatively new one, developed largely by the scientists and architects at the Building Research Station, Watford. Great Britain undoubtedly has a considerable lead over every other country in the world in this field. In America, the problem of natural lighting to factory buildings has not been satisfactorily solved and many of the newest industrial plants to be erected rely entirely on artificial light, with vision strip windows in outer walls for psychological reasons. It is doubtful whether this technique would be popular in this country, apart from the ques-

tion of the high running costs involved.

For single-storey factories in Great Britain, the traditional method of roof lighting is by means of the "north light." This gives a high level of daylighting, but tends to distribute it unevenly; it also restricts the layout of plant and machinery because the light comes from one direction only.

By EDWARD D. MILLS
F.R.I.B.A., F.R.S.A.

With a north light roof, a production line must run at right-angles to the roof light if sufficient light is to fall on both sides of the work. The north light, to make it efficient, requires a very large area of glass; this not only increases heat losses from the building, but in some cases gives rise to glare, as well as increasing the cost of glass cleaning.

To counteract these disadvantages, the Building Research Station has developed a modified form of the American monitor roof light, which admits daylight from both north and south. The advantages of the B.R.S. monitor roof-light include a considerably reduced area of glass coupled with even light distribution, the light from two directions eliminating shadows and allowing greater flexibility in machinery layout and the introduction of diffused sunlight.

One of the problems of factory daylighting is the prevention of glare. This often arises when light is admitted from one direction only. Where an operative has to work facing a large area of glazing, particularly if this adjoins a dark surface, glare and the consequent physical discomfort will arise. It is of particular importance that surfaces adjoining glazing should be light in colour, to avoid sharp contrasts, and that glazing bars



should be painted white to avoid a pattern of dark lines against the light source.

There are, of course, many ways of providing daylight to single-storey factory buildings so as to give an adequate level of natural lighting, evenly dispersed. The series of sections on this page, reprinted from the author's book, "The Modern Factory" (by permission of the publishers, The Architectural Press), shows a number of alternative arrangements, with a comparison of the daylight factor obtained. The daylight curves plotted on the sections have been computed by means of the Daylight Factor Protractors specially developed by the Building Research Station for this purpose, and obtainable from Her Majesty's Stationery Office.

The general principles in connection with the design of daylighting for industrial buildings can be summarized as follows:

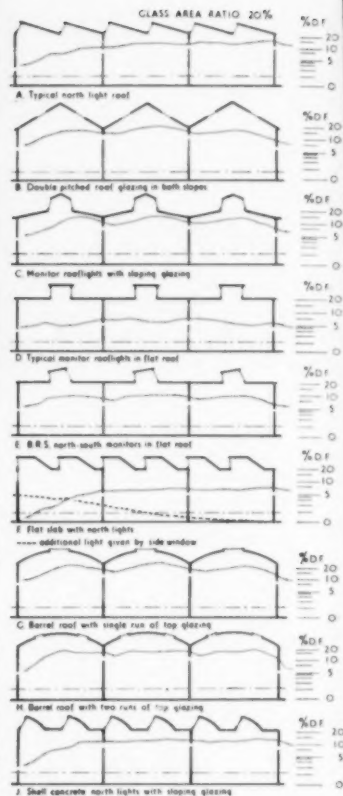
- 1: Daylighting must be adequate in intensity and provide even illumination. Shadows must be avoided.
- 2: Sunlight can usefully be admitted in many factories, providing it is adequately diffused.
- 3: Glare must be avoided, and very dark areas must not adjoin very light areas.
- 4: Excessive areas of roof glazing should be avoided to reduce heat losses, glass cleaning costs, etc.

However good the daylighting of a factory, for long periods of the year artificial lighting must be the major source of illumination.



FOR FINE WORK: Sewing machines need good local lighting. Here, fluorescent lights over the benches are combined with high-mounted general lighting.

COMPARISON: Sections on right show alternative arrangements of roof lighting for single-storey factory buildings. Red line indicates the "daylight factor" obtained throughout each building (units in scale on right). All sections have 25-foot bays; 15ft. clear height to eaves; roof glass area 25 per cent of floor area.



While it is unlikely that daylighting conditions can be easily improved in an existing building, considerable improvements can be made to artificial lighting systems even in the oldest of buildings.

The first consideration in designing an artificial lighting system is the level or intensity of illumination required for the particular work to be carried out. The Illuminating Engineers' Society and the Lighting Service Bureau have prepared a comprehensive series of tables, covering every form of industrial activity in every trade, which gives the level of illumination (in foot candles) recommended for adequate "seeing conditions." Reference to these tables was strongly recommended by the Departmental Committee on Lighting in Factories in its Report No. 5 of June, 1940. All persons concerned with the problem of factory lighting should consult this valuable information, to ensure that any lighting system is designed to give the appropriate

recommended level of intensity at the working plane, with an adequate number of lighting fittings.

Lighting fittings must be properly spaced to avoid excessive shadows and uneven illumination, and at the same time the fittings must be designed to avoid glare. This means that the light source, i.e., the lamp, must be adequately screened from the workers' eyes. Care must also be taken to see that the brightness contrast between the lighting fittings and their background is not excessive.

To avoid a tunnel-like effect in the building, a percentage of the light should be allowed to shine upwards upon the ceiling, which should itself be light in colour. Where a large number of fittings is necessary, these should be concealed as far as possible to avoid the untidy appearance of many suspended units.

Good lighting in any factory building is a sound investment which pays ever-recurring dividends, not only in better work



BEFORE AND AFTER :
(1) **LIGHTING.** These two views of the same machine-shop clearly show how fluorescent lighting, mounted above shaft level, gave far greater diffusion and eliminated highlights reflected from machinery.

and less tired workers, but also in less absenteeism and fewer factory accidents.

Whenever artificial lighting is under consideration, the question of colour should also be borne in mind, for a good colour scheme can enhance the best lighting system, just as a bad colour scheme can materially decrease the efficiency of the artificial lighting. These two problems are inseparable, although the scientific application of colour to industrial buildings is not considered by the owners of buildings as frequently as it should be.

That colour can play an important part in factory buildings has already been proved by the few enlightened industrialists who have been courageous enough to make the necessary experiments. In this field of colour in industry, Great Britain leads the world, for other countries (including the U.S.A.) have been slow to realize the advantages of properly-designed colour schemes. Colour properly used can materially improve working conditions, even in old buildings, by reducing visual discomfort and eye strain.

Backgrounds

When developing a colour scheme for a factory building, there are many points to be borne in mind. The first of these is the background colour of the workshop. The normal practice is for this to be coloured white, but this tends to cause distraction and give rise to glare and is therefore generally undesirable. The walls and ceilings of any room form the background; in a workshop these areas should be of a restful colour to provide a neutral, light surround, planned to conform to the lighting conditions and requirements of the work carried out.

The ideal background colour is one that is complementary to the material being used in the workshop, at the same time providing

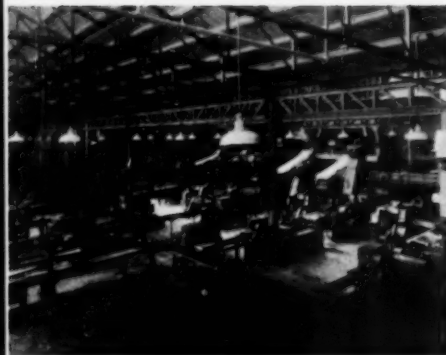


a contrast in hue to the job. Buffs, yellows and greens provide a hue contrast to most materials used in industry, and, if they are used in pastel shades, make good background colours to help quick readjustment of vision and provide relief to the eyes.

Colour can be used to give the impression of temperature variation in a workshop when other means are not available. Colours like yellow can create an effect of warmth and sunshine in a cool or dull room, while such colours as

greens and blues can give the effect of coolness in boiler-rooms, foundries and other places where it is necessarily hot.

The application of colour is not restricted to the walls of a workshop, but can be effectively applied to machinery also. Colours selected for machines must not only harmonize with the surroundings, but must also enable the various separate parts of the machine to be seen quickly and automatically. The colour employed should provide a contrast between the task



BEFORE AND AFTER :
(2) **COLOUR.** Day-light views of a factory interior before and after colour treatment showing marked reduction in contrasts and improvement of light distribution

use of a particular supply line. The adoption of this standard throughout industry would do a great deal toward the reduction of accidents of this kind.

A great many factory accidents happen because hazards in a workshop are not clearly marked. They should be identified with an arresting colour, orange being the most suitable; red should be reserved for fire-fighting equipment, and blue used on such things as electrical gear as a cautionary colour. Protective parts of machines, such as switchcovers and machine guards, should be marked with a hazard colour on the inside, so that when they are not in their proper place they become clearly visible.

It will be seen that colour properly applied and allied with good lighting can provide, at a relatively low cost, many aids to better work in both old and new factory buildings. In these days of

on the machine and the part of the machine that acts as the immediate background to the task. Operating parts such as levers, push-buttons, switches and tool points should be coloured to increase their visibility and make them stand out from the rest.

It is important, however, that where operations requiring great concentration on the part of the worker are involved there should be no bright spots within the operator's range of vision, as these may cause distraction and therefore be the cause of accidents.

One of the determining factors in the general choice of a machine colour will be the size of the machine involved. A bold colour treatment is suitable for large machines and a more delicate colour treatment for small ones.

Marking Services

Pipe lines and service runs in a factory require special colour treatment. They should be coloured according to British Standard No. B.S. 1,710, 1951, "Identification of Pipe Lines." This not only makes rapid identification possible, but also reduces the risk of accidents caused by the wrong

PICTURE SOURCES : Thanks are due to Architectural Press, Ltd., for permission to use the photograph on page 71 (from *Architect's Journal*) and diagrams on page 72 (from Mr. Mills's book, "Modern Factory"). Photographs on pages 72, 73 and 74 are reproduced by courtesy of the British Electrical Development Association from their book, "Lighting in Industry."

reduced capital expenditure and limited new building, many factory owners are forced to carry on with unsatisfactory buildings which they would like to replace by modern factories if conditions allowed. The proper use of lighting and colour can do a great deal to improve these old buildings with their poor colour schemes, dull machinery and ineffective lighting. Ugly, sunless and badly-proportioned rooms can be made to appear larger and less cramped, if colour is properly applied.

Many enlightened factory owners are already seeking the advice of experienced practising architects and consultants and are obtaining results well worth study in both old and new buildings. The majority of old factory buildings (and, unfortunately, many new ones) fall far short of the desired standards in respect of both light-

ing and colour. Until industry as a whole concerns itself with these problems it will not be able to make the best use of the limited manpower and valuable materials used in its work.

The fact that good factory buildings help to produce greater efficiency, higher quality work, and more contented workers cannot be over-emphasized. The enlightened use of both natural and artificial lighting and colour can be an important factor in producing improvements in the industrial environment within which so many people spend a large portion of their active lives.

Fluorescent Lighting

The development of fluorescent tubes has been considerable during the past few years and they are now widely used in industrial buildings. There are a number of important factors to be borne in mind when considering their use. They are at least three times as efficient as ordinary filament lamps; their low brightness and high diffusing properties helps to reduce shadow and glare; they can be obtained in daylight colours; they produce considerably less heat than tungsten lamps for the same light output; and they have a long life.

Another factor of interest is the fact that their long shape makes them particularly suitable for lighting benches, conveyor belts, etc., as the light source can then run in line with the bench arrangement. This is of great assistance in producing good appearance.

Fluorescent lighting, either hot or cold cathode, is very economical in running, and the fact that daylight conditions can be very nearly reproduced means that the daytime atmosphere of a factory can be maintained when natural lighting is inadequate.

Fluorescent lighting is generally more expensive to install than tungsten lighting, but the reduction in lamp replacement, the economic running and the high quality, particularly when daylighting is not available, make the initial outlay a sound investment. The ideal arrangement is probably a mixture of two light sources, fluorescent lighting for specific lighting of benches, equipment, etc., and general lighting by tungsten lamps as background illumination.

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NEW CHECKING SYSTEM HANDLES MORE WORK TEN TIMES AS QUICKLY



Flow-Line Methods Speed Valve Servicing

Before the war radio valve manufacturers did not require large service departments; most radio sets contained a maximum of four valves and television was in its infancy. Today, the situation is different. There are many more radio and television sets (the latter contain 20 valves on an average) and quick service is essential. At the Brimsdown works of the Edison Swan Electric Company, Ltd., a new flow-line service department for handling valves under guarantee has been created. The department provides a 24-hour service for any of the 25,000 radio dealers in the British Isles, plus wholesalers and manufacturers. Checking and handling valves is now ten times as fast as the previous servicing system. The department may be called on to check any of 400 types of valve.

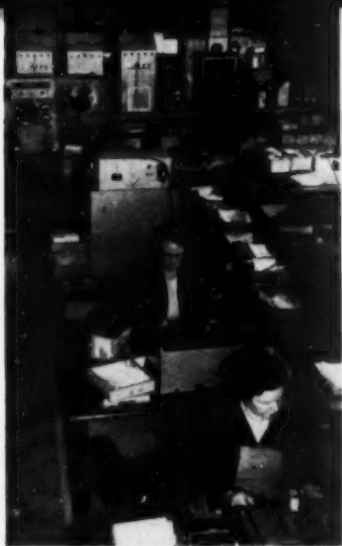


Operations commence with the opening of incoming packages. Alleged faulty valves with their accompanying guarantee forms and correspondence are put in wooden trays which are placed on a roller conveyor and progressed to typists.



2 Typists take trays off the top conveyor track and make out a five part set of advice notes: traders' copy, packing note, accounts copy, stock record and file copy. On this are typed details of the valves, the dealer and the guarantee reference number. A letter to be sent to the set owner—informing him that a replacement valve has been sent to the dealer—is also prepared. These documents go back into the tray with the valves and the tray is placed on the lower conveyor track and passed to the first operator.

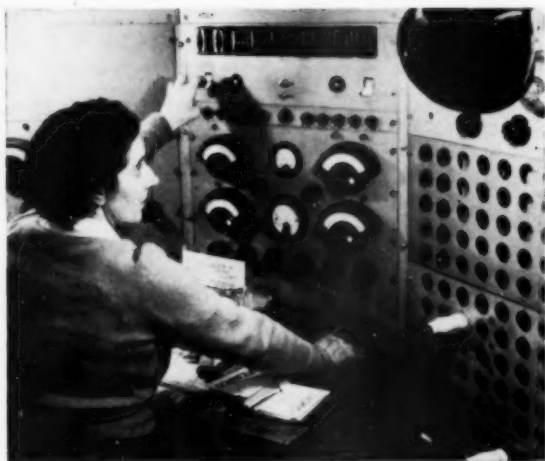
BUSINESS



3 The first operator tests the valves for "general shorts" or "disconnects". If the valve is found faulty, the advice note is completed in the appropriate column and a "tested" card put in the tray. If the valve is still faulty a "query" card goes in the tray and it is passed on to other operators who check for "emission" and "general" characteristics.



4 Rectifier valves go straight to this special test equipment for checking. If no fault can be found they are given chassis tests. Wooden trays have two pins protruding from the sides so that nests of them can be locked together without any fear of them sliding apart when pushed along the conveyor track.



5 Valves that are still not proved faulty continue with a query card and are diverted to the standard factory type test board where they receive a full range of specification tests. If they are still satisfactory they receive chassis tests in a bank of receiver chassis.



6 At the conclusion of the test procedure, trays are removed from the track. The five part set is split up. The traders' copy is despatched to the dealer, the packing note goes with relevant valves to the packing section. The stock record is kept in the service department for statistical purposes, the file copy is attached to the guarantee and filed under the dealer's name and the accounts copy is entered on a summary sheet. The advice letters are also despatched to the set owners.



7 The packing section quickly and expertly prepares the valves for despatch. Valves are either the original ones received which have been found up to standard or new valves being replaced under the terms of the guarantee. A portion of the packing note is perforated and is detached and used as a label.



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Foolproof Control for Management



This article in
ONE MINUTE

MANY firms persist in using methods that are clumsy and inefficient because they fear that the introduction of more rational methods will entail a large capital outlay on machines and equipment.

The fallacy of this kind of reasoning is conclusively demonstrated by the case of Oetzmann & Co., Ltd., the well-known London home furnishers.

When their mail order department was expanded recently, the handling of orders became a major clerical problem. The system in use proved inadequate to deal with the increased work and as it was already unsatisfactory for various reasons, an overhaul became imperative. A meeting of departmental managers was held and a systems expert called in. He examined the problem and then designed a set of forms that reduced the whole clerical operation to a single writing. Not only has this meant a great saving of time and labour but it has also resulted in the customer receiving a better service and a virtually foolproof order control system being obtained by the management.

The problems that had to be overcome and how the set of forms solved them are described in the following pages.

How to Record Mail Orders on a Single Sheet

By PATRICK GORDON

FOR a proper understanding of the way in which a carefully designed set of forms has saved much time and effort at Oetzmann's, it is necessary to understand the clerical operations involved. When a mail order is received, it has to go through the following processes:—

1. Reception and acceptance.
2. Acknowledgment.
3. Stock control and general preparatory work before execution.
4. Instructions issued to departments and goods forwarded to despatch.
5. Packing and despatch.
6. Sales dissection, maintenance of mailing lists, etc.

At one time these processes involved a considerable number of

separate clerical operations. First of all, a letter of acknowledgment had to be sent to the customer.

Next, an entry was made by a clerk in a mail order record book for permanent preservation in chronological order.

A normal triplicate book was then used for producing the paperwork documents connected with the sales transaction.

The top copy from this "charge book" was sent to the customer as an acknowledgment that his order had been received. The second (flimsy) and third copies were passed to the accounts department.

In the meantime, another clerk

made out (in a duplicate book) a departmental order. This was the authority for the departments concerned to release the goods to the despatch department.

In the accounts department the flimsy from the charge book was used for dissection and paying commission, etc. The third copy was also used for accounting purposes, and then passed to the despatch department. On receipt of this, the packers collected the goods from the departments which had already been advised to release the goods. The label was then written out by hand and the goods packed and despatched. The charge book carbon copy was returned to the mail order depart-



One of the furniture showrooms of Oetzmann and Co., Ltd., at Hampstead Road London.

printed on different coloured paper. Between the first and second parts a sheet of "spotted" one-time carbon is bound. Ordinary sheets of carbon are inserted between the other sheets for typing.

The top sheet of the form is white, and is perforated horizontally between each of the five sets at view. Since the original typing is done on this sheet, it serves as the master layout to which the other sheets must conform. The left-hand half of the sheet has spaces for the date, the department executing the order, and the assistant, the address to which the goods are to be sent and the account address (if different from the above). The other half of the sheet contains a list of the goods ordered and their price. Each half of the form has the serial number of the order printed on it. When completed, the sheet is torn off, folded to show either the goods or account address, and put in a window envelope for despatch to the customer. This is his acknowledgment; if there is any query, he is asked to refer to the order number.

The second (grey) sheet is perforated vertically down the centre, as well as horizontally. The left-hand part is the label for the goods. Because of the "spotting" of the one-time carbon (already referred to), only the "goods" ad-

ment as a check that the goods had been despatched.

In order to keep mailing lists up to date, index cards had to be prepared from the names and addresses entered in the mail order record book when the orders were received.

Oetzmann's recognized that this method of dealing with their mail orders was not as efficient as it should be. Control was not positive, and reference to past orders was none too easy. The same basic information was being written several times over, and the manual methods of recording were slow and laborious. There was also a danger that transcription errors could arise, and that other mistakes could be made from the indistinctness of carbon copies and handwriting.

When the mail order side of the business was expanded a short while ago, the system was inadequate to deal with the increased volume of work. This gave the management their opportunity to overhaul the whole system.

A conference was called of the department managers concerned to discuss the problem. It was agreed that there was nothing wrong with the method of handling the orders; the fault lay rather with the paperwork system employed. The decision was therefore taken to redesign the system and the forms and stationery used. A systems expert was consulted, and as a result a set of forms was evolved that enabled all the clerical operations to be done

in one writing; the forms also had various other advantages.

An unusual side-by-side layout was adopted. It was originally thought that eight separate forms would be needed—one for each of the operations to which the order was subjected. The side-by-side layout, however, allowed two forms to be combined on a single sheet of paper in some cases, and the total number of forms was reduced to five.

The five-part set was printed with five forms at view, and had a "memo-set" head to keep the forms perfectly aligned during typing. The fact that five forms were printed on the same sheet saved much handling time by typists, and also reduced the printing costs.

All the forms on each part were overprinted with a serial number, and in the stationery finally adopted each part of the form is



This view of Oetzmann's hardware and electrical department gives some impression of the variety of orders which the firm meets.

dress is reproduced on this. On the right-hand half of the sheet the items ordered and their prices are reproduced; this information serves as packing instructions for the despatch department. A space is provided for the name of the packer and the method (road, rail, etc.) by which the goods are despatched. After the goods have been packed, the form is returned to the mail order department to show that the delivery has been made. Both halves of this sheet also are imprinted with the serial number.

The third sheet is green and is not perforated. These sheets are filed in chronological order in a Post binder and give a complete record of all transactions. Since each sheet has the serial number on it, reference to a particular order is easy.

The next (blue) sheet is not perforated either; it is used as the dissection copy from which the accounts department abstracts information for paying sales assistants commission, etc. This copy, too, is filed for some time so that any mistakes can be checked.

The final sheet is printed on

pink paper, and is perforated vertically and horizontally. This sheet serves a dual function. The left-hand half (on which the name and address of the customer is reproduced) is used for keeping up to date the firm's mailing lists. The form itself is filed in alphabetical order. This saves retyping the information on separate index cards. The right-hand section of the sheet acts as the "sold label."

of error and saves time in interpreting instructions, etc. The use of part of the form as acknowledgment, and mailing it in a window envelope, eliminates both letter writing and the addressing of envelopes. And, perhaps more important, the customer gets his acknowledgment by return of post. Filing is also simplified because all orders are preserved in sheets of five in strict numerical order.

Review of Office Equipment opens on page 109

It is sent to the department concerned as the order, and is pinned on the goods to show that they have been sold. The men from the delivery department thus know exactly which goods to collect and to which order they belong.

The improvements and savings effected by the set of forms can be seen by comparing the systems used before and after the introduction. Advantages have also resulted in one or two less obvious directions. For instance, all instructions, labels, records, etc., are typed, which reduces the chance

Savings of time and effort have in truth been achieved in many directions. A mail order office is inevitably subject to peaks of work, but Oetzmans have devised a system which is capable of taking the heaviest work load without requiring a large staff that would be idle during slack periods. The system needs no equipment, except a standard typewriter, and an extra typist can be drafted at once if a sudden peak occurs. No other bottle-necks can arise, as typing is not necessary at any other stage.

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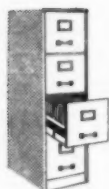
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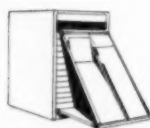
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incentives in the office

Are office incentives effective? Are they resented by the staff? Does the administration involved outweigh the benefits derived from the schemes? Can equity be ensured? In short, are incentives in the office worth it? These are some of the points that have been hotly debated for years among office administrators. In a new series of **BUSINESS** case histories (of which this is the second) many of these questions are answered from the practical experience of firms of diverse types and sizes.

Second of a Series of Case Histories

AN old-established family business, Barrows Stores, Ltd., of Birmingham, is chiefly concerned with the retail selling of food. Not large by some standards, Barrows Stores do, however, compare favourably with similar businesses in the provinces. The total staff is 518, of which about 65 are clerical workers. These are employed in three main sections: invoicing, ledgers and the general office.

Employees in all departments are covered by incentive or bonus schemes. Incentives were first paid to office workers before the war, when a quarterly bonus was distributed to staff in the invoice office at the discretion of the department head. From this, schemes were evolved for all the office departments which were directly designed to increase output and get work done promptly.

These schemes differ in their conception and operation in each of the three main office departments. They are therefore best described separately.

1. Invoice Office: In this section, an individual bonus is paid according to the output of each clerk. The work involved consists of checking and making up invoices on forms, each of which has 16 lines. For the purpose of the bonus, each line counts as an item. The clerks scribble in a rough notebook the number of items. Counting these is easy, since many of the invoices use all, or nearly all, the 16 lines on the form. Simple subtraction thus gives the total of items per form at a glance.

These items are totalled daily by each girl on a hit. A clerk collects the hits, checks the totals, and enters them in a book against each girl's name. At the end of the week, the daily totals are added up. Duplicates have to

This Scheme Has Brought Better Schedules with Less Supervision

be dissected into commodities for the various departments, and totals entered in a grid on the duplicate.

Bonus is paid quarterly to the girls according to the following scale:—

Up to 65,000	at 6d. per 1,000 items
65,000 to 80,000	" 9d. " " "
Over 80,000	" 1s. " " "

This scale was arrived at without the use of time and study methods. A figure for reasonable minimum output was decided by averaging the quantity of work performed by the girls under existing conditions. At first, 5d. per thousand was fixed as a standard payment for work done in excess of the minimum. This figure was later raised to 6d., and a graduated scale introduced. This was arranged arbitrarily, but in the light of accumulated experience.

Those girls in the department who perform jobs other than invoicing (recording catering permits, for example) are paid a standard sum quarterly. This is fixed as the average of what they have earned when doing normal

invoicing work. Since great accuracy is the first requirement of this extraneous work, it is considered unwise to "pay by results," since inaccuracies might result.

No regular checking is done of the work of the invoice clerks, but a physical check occurs when the invoices go to the despatch department which handles all the items on them.

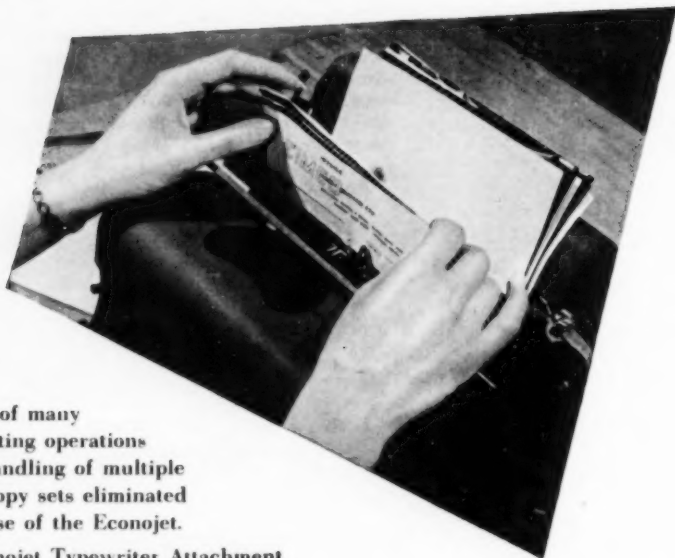
Sixpence is deducted for ordinary mistakes and 3d. for dissection mistakes. A deduction of 6d. may also be made for each "late" over four in any quarter.

The chief invoice clerk and the senior clerk are paid a clearance bonus on the percentage of orders cleared to the despatch department by the clearance time laid down for delivery the following day.

The clearance bonus is very simple in operation. Three sheets are kept, on which the senior clerk enters the times that the last orders for each delivery are cleared from the invoice office. The despatch manager does the same for his own department. The sheets are passed to the transport manager, who checks that the

By LEE JOHNSON

CONTINUOUS STATIONERY . . .



Just one of many time wasting operations in the handling of multiple carbon-copy sets eliminated by the use of the Econojet.

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M.											M.										
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S.											S.										
TOTAL											TOTAL										

Left: Simple typed form completed by individual worker to record job times

Below: Printed slip on which postings are recorded

Date and Type of Matter		LEDGER NO.	
Pre-listed by		Date	
Posted by		Posting	

times are correct and initials the sheets. At the end of each quarter, the number of "on-time" clearances is worked out as a percentage of total clearances. A fixed amount of money is set aside for the bonus, and the percentage of this fixed sum paid out is the same as the percentage of on-time clearances.

Some idea of the effectiveness of the bonus scheme in increasing the output of the invoice office can be obtained from the figures of numbers employed in the department. At one time, there were 12 girls on the desks. At the beginning of 1950, this number was reduced to 11, and by the end of the year it was down to 10. At present, only eight girls are employed, and several of these are part-timers. Although the volume of work handled by the department has been somewhat reduced during the period quoted, the figures indicate that there has still been a considerable economy.

2. Ledger Office: This department is covered by a group bonus scheme. The work done in the office falls into two categories—sales and purchase. The different jobs done under these two headings are:—

- | | |
|---|---|
| Sales | Purchase |
| 1. Daily credit sales and departmental analysis | 1. Invoices issued to departments (daily) |
| 2. Machine posting (ledgers) | 2. Machine posting (ledgers) |
| 3. Statements (by fifth working day) | 3. Accounts paid by dates due |
| 4. Ledgers balanced | 4. Departmental figures (monthly and quarterly) |
| | 5. Ledger balances |

The scheme was started in 1937, and was last modified in 1952, when purchase ledgers were mechanized and transferred from the general to the ledger office. A group bonus was employed because the jobs are so interdependent that it would be difficult to assess individual outputs for reward.

Bonus Deadlines

The bonus is payable on jobs complete according to scheduled times. Below is given an extract from the schedule showing the deadlines for certain jobs:—

Sales Ledgers

1. Credit sales summary—Monday 5.30
2. Mid-monthly statements—16th of the month
3. Monthly statements completed by (a) 3rd, or (b) 4th working day of next month
4. Ledgers balanced—5th working day

Purchase Ledgers

1. Postings completed by each Saturday
2. Cash and discount summaries—last day of month
3. Balance ledgers (a) 4th, or (b) 5th working day of next month

For each operation finished on schedule, a certain sum is paid into a common pool for distribution at the end of the quarter.

For jobs such as sorting, pre-listing, posting, etc., a standard rate-per-hour has been worked out. Bonus payments for maintaining these rates are also entered on the schedule. Girls doing the jobs keep a time card

showing the lengths of time spent on each (picture above shows an example.) The totals of these times, multiplied by the standard rates, give the amount of bonus earned. This, too, is paid into the pool.

A separate slip is used for recording the total of postings. A check is taken on these from the tally rolls of the accounting machines.

The standard rates per hour were arrived at by recording outputs over a number of months and taking an average. The rate was then set lower than the average, to allow a useful bonus to be earned.

At the end of the quarter, the amount in the pool is divided by the total number of shares to be distributed. The individual's number of shares varies according to the job. All jobs are graded according to the Office Management Association scales, so each person's number of shares is easily determined.

The minimum shares received by any person is two, and the maximum 15. New-comers to the office must serve for three months

Continued on page 127



Oh-the **NOISE!**

One empty coat-peg frequently leads to many—

For one little *sound* frequently reverberates into a dozen distracting noises. Staff leave because they want quieter jobs. Stop these noises and you stop headaches, nervous strain and absenteeism. Whether the battle against clatter is conscious or not, its damage is real. It saps valuable mental and physical stamina, wastes time and materials. Call in Cullum. Cullum will rid you of all harmful noise — *and* make sure you can hear everything you want to hear.

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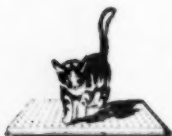
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PROGRESS WITH QUIETNESS

86

BUSINESS

When Man-Abell Quarries, Ltd., decided to operate their own transport fleet they had to find a suitable costing system to go with it. They found the answer in a single large form, a considerable portion of which is completed by the lorry driver. The rest of it can be completed in a few minutes by a clerk. The result: every week they know which vehicles have made a profit, which have incurred a loss, and how this result was achieved.



Driver's information is obtained at the weighbridge.

CHARGES for the delivery of quarry stone are laid down and agreed by the quarry owners' association; a quarry transport fleet must work within these charges, otherwise the losses incurred will have to come out of the profits. Tight and accurate cost control is, therefore, extremely essential.

100-Mile Trips

It was two years ago that Man-Abell Quarries of Mancetter and Hartshill decided to operate their own fleet instead of relying on hired transport. There were a number of reasons for their decision. One of the principal factors that influenced them was their widespread deliveries—often over 100 miles from the quarries.

The fleet, consisting of 11 Leyland Comet diesel lorries, was ordered in 1951 and first deliveries were made in August, 1952. At this stage, it was necessary to work out a suitable scheme for

giving the company accurate information on the operation of each vehicle. The system they wanted had to fulfil certain basic requirements:

- 1: It had to present accurate operational information on each vehicle every week
- 2: It had to be simple and cut paper work to a minimum
- 3: It had to make provision for all items of expenditure, including standing charges such as insurance
- 4: It had to be so arranged that some form of driver incentive scheme could be incorporated.

The result is a lorry earnings and costs sheet that provides all these features. This form, together with a monthly summary sheet, is the basis of a costing system that gives a weekly analysis of income and expenditure of every individual vehicle. The clerical work to maintain these records is a part-time job for one member of the office staff.

HOW ONE FORM GIVES WEEKLY CHECK ON LORRY COSTS

By ROBERT SPARK

The lorry earnings and costs sheet is printed on stout paper to withstand plenty of handling. Each driver is issued with one at the beginning of the week. Every job the driver does he enters on the sheet under the headings: date, loading point, destination, customer, description of load, miles operated and hours worked. He obtains the information relating to the weight, description and destination of the load at the weighbridge when he receives his delivery notes.

All these details appear on the "lorry earnings" side of the lorry earnings and cost sheet. Diesel fuel, engine oil, axle oil, gear oil, etc., are entered on the "lorry costs" side. There is also space on this side for other details, such as batteries, tyres, repairs, spares used, labour for repairs. Thus all running costs incurred throughout the week's operation are entered—this being done under the supervision of the transport manager.

All-in Total

At the end of the week the form is returned to the office, where the earnings side is completed by extending weights carried at the appropriate delivery charge for each individual journey. Other columns are totalled up. Added to the costs figures are the driver's wages, and allowances for the

GRANITE QUARRIES (HAULAGE) LTD. LORRY EARNINGS.

[illegible]

Top of the lorry earnings and costs form, showing the comprehensive headings. The bottom portion of the form is shown beneath, indicating how columns are totalled. Below is the top of the monthly summary sheet. These two forms make up the system.

road fund licence, lorry insurance, driver's insurance, tyres and administration costs. When finally totalled, the sheet shows whether the lorry has in fact, on the basis of the amount earned and costs incurred, made a profit or a loss.

Special consideration is given to the question of tyre costs; Man-Abell take 20,000 miles as the



Bonus system encourages drivers to keep the fleet in top condition.

average tyre life under operating conditions. The weekly allowance for tyres is charged at the rate of .375d. per mile per tyre, or 2.25d. per mile for the complete vehicle. Should a tyre fail before that mileage, the balance of the initial cost is written off against that vehicle for that particular week. If, however, the tyres last beyond 20,000 miles, no tyre allowance is charged until replacement becomes necessary and the lorry's profits increase in consequence.

To fulfil the requirement of a driver incentive scheme, Man-

Abell have a simple but effective answer. Each driver receives a quarterly bonus which is equivalent to 10 per cent. of the profit earned by his lorry in the preceding three months. It is in the driver's own interest to get the best operating results from his vehicle. This is reflected—at least externally—in the smart appearance and good condition of the fleet in spite of the rough and arduous work they have to perform. Bonus earned by the drivers each quarter varies from £2 to £15.

[illegible]

Week ending _____

LORRY COSTS.

DIESEL GALLS	ENGINE OIL PINTS	AXLE OIL PINTS	GEAR OIL PINTS	TIPPING OIL PINTS	BATTERIES Serial No's	TYRES Serial No's	HOURS WORKED		TOTAL DAY Hours	REPAIRS SPARES USED	HOURS Fitter Ass	COST	UNIT	TOTAL COSTS		
							From	To						£	s	d
<div style="display: flex; justify-content: space-between;"> <div> <p>Total Hours Week _____</p> <p>Hours Normal _____</p> <p>Hours $\times 25\%$ _____</p> <p>Hours $\times 50\%$ _____</p> <p>Gross Wages _____</p> </div> <div> <p>Road Fund Licence _____</p> <p>Lorry Insurance _____</p> <p>Driver's Insurance _____</p> <p>Depreciation _____</p> <p>Tyre Allowance _____</p> <p>Administration _____</p> </div> </div>																

Should a driver be involved in an accident which is his fault, the 10 per cent. bonus is reduced by $2\frac{1}{2}$ per cent. Weekly tables are also posted up in the garage showing the miles per gallon achieved by the various drivers in the previous week. This also acts as an incentive to drivers to be economical in the use of fuel.

In order to maintain the bonus system and the costing system on a fair basis, the company keep to the policy of "one driver, one truck." This policy is maintained to the extent that if a driver is

away sick, his vehicle is laid up.

Each week, after the profit or loss of every vehicle has been calculated, the principal details are transferred to the summary sheets which provide a permanent record of each lorry in a loose-leaf book. Details on the summary sheet are totalled at monthly and three-monthly intervals. These figures are also used to assess the driver's bonus each quarter.

Another monthly summary in the same form is prepared showing all the records of the separate vehicles and the fleet totals, and

these latter figures are, in turn, transferred to a final summary which is totalled at the end of each quarter. In addition to the basic figures of earnings, costs and profit or loss, the summary sheets show costs under the main headings of wages, oil, grease and repairs, tyres, fuel and standing costs.

Thus, with very little paper work and a remarkably simple system, Man-Abell Quarries, Ltd., have effective and accurate figures on fleet costs which are available weekly, monthly and quarterly.

[illegible]

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Flow-line in packaging: part of the machine cartoning section at the Slough factory of Aspro, Ltd.

Work Study Brought Fifty Per Cent Rise in Packaging Output

By A. G. THOMSON

BY reorganizing their packaging department after a work study survey, Aspro, Ltd., have secured a 60 per cent. increase in throughput without increasing the number of workers. Main features of the programme have been intensive mechanization of the packaging operation, careful time and motion study of each job, and the introduction of a bonus scheme based on these studies.

Need for the reorganization stemmed largely from lack of space. Aspro Ltd. were founded in Melbourne, Australia, in 1915; it was not until 1927 that production was started in Britain at a factory in Slough. Output expanded rapidly, and by 1938 plans were in hand for a large new factory. The outbreak of war prevented a start being made on this, and to date no building licence has been obtained. Hence methods have continually had to be devised for achieving higher output in the existing premises.

Melbourne, in its time, had to face similar problems, and in 1949

P. G. Smith, a director of Nicholas (Pty.), Ltd., visited Slough. It was under his direction that the reorganization was carried through.

After the ingredients of Aspro tablets — mainly acetylsalicylic acid — have been mixed and granulated, they are delivered to tablet-making machines capable of making 1,000 units a minute. The tablets are then automatically wrapped in waxed paper by *Sanitape* machines, or heat-sealed in *Cellophane* by *Sealtite* machines.



By reorganizing a packaging department on flow-line principles, mechanizing all handling, and introducing a bonus scheme based on time and motion study, Aspro, Ltd., were able to overcome difficulties caused by lack of factory space. Result: a production increase of about 60 per cent. without additional floor space or staff.

Tablets sealed in waxed paper are individually cartoned, while the heat-sealed tablets are packed into show boxes by hand. The show boxes and cartons are packed in cases ranging in weight from 20 to 50 lb., depending on the size of the pack, and transported to the dispatch bay.

First step in the reorganization was to get the method right. The packaging machinery was improved and changes were made in the layout which enabled a constant flow of work to be maintained.

Improvements in layout in themselves eliminated much manual moving of materials and products from one department to another, and the remainder was drastically reduced by the introduction of mechanical handling. Formerly, packed goods were handled on stil-lages by a platform truck. Now, palletization and the purchase of two fork-lift trucks have enabled about 14 men to be transferred to other work. Eventually, all stores and packed goods will be palletized.

The introduction of flow-line methods also meant that the nature of the work was changed in some cases. Previously, workers employed on the packing benches or operating the packaging machines had to get up and fetch supplies of tablets or materials. Now, ancillary workers are employed to feed all materials to the operatives, who concentrate exclusively upon the job of packing. Chargehands are responsible for seeing that all materials needs are available in sufficient quantities.

Once the new methods had been established, a bonus scheme was

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worked out and introduced. The scheme adopted is based on two simple principles defined as follows: (a) the expectation of a normal day's work in return for fixed time wages and rewards by bonus payments for additional production; and (b) measurement of work necessary for the performance of the operation. The latter requirement involves detailed work study, both to determine the best method of performing the work and to establish reasonable times for it.

Time and motion study were applied to the various operations involved and standards were found and fixed. These standards remain unchanged until such time as either method or machines are altered or improved. This is regarded as one of the main points of the scheme, since it gives workers a sense of security and a belief in the integrity of the scheme itself.

The bonus rate is the same as the basic rate and operatives receive the full benefit of all production in excess of that required by time study standards. Thus an operative who produces 80 minutes' work within the hour receives a bonus of 33½ per cent. In jobs such as hand cartoning, where the pace is not limited by that of a machine, girls sometimes achieve outputs as high as 90-100 minutes' work within the hour.

The hours of work for the machine packing staff are 7.45 a.m. to 12 noon and 12.45 to 5.30 p.m.; for the hand packing staff they are



Efficiency in a small area: the straight-line layout of the Aspro factory

A bonus scheme can only be made to function successfully by the elimination of all retarding influences beyond the control of the operators. Material variations and faulty operations were therefore tracked down and rectified, suitable allowances being made while these adverse factors were operating. Poor performers were given tuition in method and were encouraged by being granted allowances, provided that they honestly tried to show some improvement. Operatives who were persistently below standard and who failed to respond to tuition were transferred to work more suited to them, on which they could reach the required standard.

In introducing a new system of payment, particularly one based on time and motion study, it is essential to gain the confidence and co-

little doubtful about the 60 work rate, which called for 28 gross, but in a short time they found they could do it quite easily, and outputs of 40-45 gross per day were soon being achieved. By altering the methods and installing a flow line belt, the number of girls in this unit has been reduced from 80 to about 35.

Work study has given such impressive results that when any new job is started it is now standard practice at Aspro to decide on the correct way of doing it before time study is applied. A particularly good example of the economies effected is the use of a mirror to eliminate the need for a second operator on a certain machine. Formerly, there were two girls on this machine, one responsible for work coming off and another sitting down and packing. Now the machine has been altered in such a manner that the girl packing can also control it.

The bonus scheme was first put into operation in February, 1950, and it has proved an unqualified success. Production has been increased by about 60 per cent. overall without additional floor space or staff. Costs have obviously been cut because a larger output has been spread over the same overheads. The workers have benefited because they are earning up to 40 per cent. more.

Aspro were in the fortunate position of being able to bring their new reorganization programme into effect without causing any redundancy among their staff. Owing to the war, they had many elderly people who had reached the age of retirement, while much of the hand packing used to be done by part-time workers.

Industrial Equipment is reviewed on pages 116 to 120

7.45 a.m. to 12.15 p.m. and 1.00 to 5.30 p.m. Base rates are paid for the full nine hours worked and short time is deducted in the following manner: 3-8 minutes is taken as 6 minutes, 9-14 minutes as 12 minutes, and 17-20 minutes as 18 minutes.

The time standards include various allowances for effort and personal time, such as two 10 minutes tea breaks, 5 minutes start-up time, 5 minutes clean-up time, and 5 minutes clock-off time. The five minutes for start-up time is merely to allow for unavoidable delay in getting machines, etc., running smoothly. Delays of over three minutes are allowed if the operator claims them immediately and they are not her fault.

operation of workers from the start. Supervisors were therefore specially trained to answer questions and full explanations were given at every stage to all the operatives concerned. As a result, the scheme was well received.

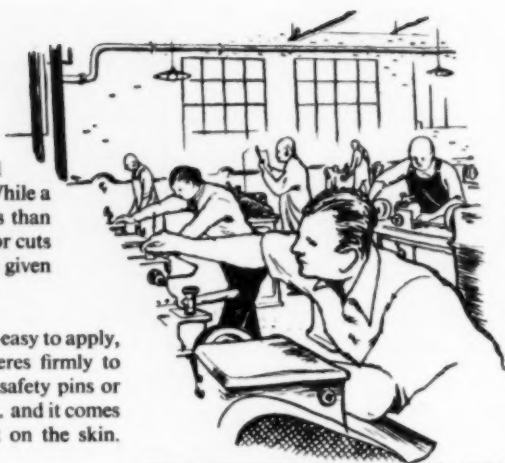
Before time and motion study was introduced, two girls operating a Sanitape machine used to produce on an average 25 to 28 gross daily of 27-tablet packs. By studying the whole operation, fixing a standard, and establishing an incentive bonus scheme, the average output per girl was raised in a few weeks to 38-40 gross per day.

Before hand cartoning was time studied, the average output per girl was about 18 gross per day. At first, a few operators were a

All thumbs!

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New Materials are Setting Higher Standards

By W. J. S. GRAHAM

THE new trend in the design of protective clothing and equipment is towards an article which is more comfortable, gives greater protection, and has a longer life than its predecessor. The cheap article with a short life is not as common today as it was before the war. Indeed, its days are numbered.

There is a simple explanation for this—the wider understanding by top management of the economic need for safety and the importance of organizing to secure it. Money has been spent, but it is saving yet more money. Hundreds of trained safety officers have been appointed who have created the demand for more and better protective clothing. And the demand has been met.

Eye Protection

A glance at the catalogues will indicate some of the important changes that have taken place. Very prominent are the new materials, which enable higher

standards of safety and service to be set and attained.

Eye protection provides an example. A standard piece of equipment used to be the cup-type goggle, usually with the lens held in position by bent metal clips.

The economic, as well as the humanitarian, value of safety has led to the development of quality products for personal protection. New standards and new materials have made their appearance, and though prices are higher than they were before the war, goggles, masks, overalls, hats, boots and other items can be relied upon for lasting and effective service. This article is the second of a series by an industrial safety officer.

This has been replaced by a light, plastic-framed spectacle or box-type goggle which can be worn over corrective spectacles. Safe and comfortable to wear, these goggles have lenses or plastic fronts which are easily and cheaply replaced. They cost more than the old type, but they are worth it.

All that remains is for manufacturers to give more attention to the problem of service. Only a few have realized that microscopic screws present awkward maintenance problems to the average factory.

Face Shields

Face shields have improved considerably in general design. For instance, it is no longer necessary for a welder to wear goggles under his helmet as protection during chipping. One model features a Perspex screen which is automatically lowered over the eyes when the helmet is raised. In another, the helmet is not lifted at all; instead, a knob turned on the front of the shield raises the green screen and allows the welder to look through clear, toughened glass.

The fibre hard hat has a competitor in the phenolic resin-bonded fabric helmet, which will stand a greater drop load and meets the requirements of the



DURABLE (AND ATTRACTIVE) : Industrial overalls in coloured "Viking" nylon cloth
Courtesy of British Ropes, Ltd., Leith, Edinburgh.

International Labour Office. This helmet, and another new type of plastic hard hat, can be sterilized by boiling.

Breathing Apparatus

Breathing apparatus has shown little change in design, but every encouragement is being given to the wider use of air-supplied masks instead of the canister type. This applies particularly to the chemical industries. The *Randle* mask, which has air supplied through a narrow bore rubber line, was a war-time development and is giving excellent service. A reel is available for this and other types of apparatus which takes up slack air line and so avoids kinks and tripping hazards.

Plastic Glove

A major development in personal protection is the plastic glove. A number of new types were marketed only last year. These are either ribbed or heavily reinforced with P.V.C. over the working area. On trial, the reinforced glove has given twice the length of service obtained from the standard weight, yet the difference in price is a mere 1s. 6d. per pair. The ribbed glove is only 6d. more than the standard, and is stronger, longer-wearing and

less slippery. Another new product is a very light glove for assembly work. This replaces the cotton variety.

Until recently, laboratory gloves have been made from unsupported rubber, but it is now possible to obtain them in supported and unsupported P.V.C. On trial, the supported P.V.C. glove has been found to possess much longer life and greater tear-resistance than

Right : The *Randle* compressed air helmet
Courtesy of Siebe Gorman and Co., Ltd.,
Tolworth, Surrey.

Below : Modern design in wide-vision goggles; can be worn over spectacles
Courtesy of Imperial Chemical Industries, Ltd.



the normal rubber glove. The standard of protection is excellent and the sense of touch is good enough for nearly all the practical work that has to be undertaken in the laboratory. All the laboratory gloves supplied by one manufacturer are pressure-tested to 20lb. per square inch.

Very hard wearing leather gloves have been produced which are made of chrome tanned pig-skin butts. Welders like them because the metal spatter does not adhere easily to the smooth surface of the leather.

Body Protection

Body protection, too, has been improved by the new materials. Overalls and boiler suits are expensive, for the life of a cotton garment is probably only 26 to 36 weekly washes. In the case of a boiler suit, depreciation may represent a weekly cost of 1s., to say nothing of laundry charges. The life of a nylon suit, however, may be four to six times that of its cotton equivalent, and it is virtually indestructible where alkali conditions are encountered. For acid resistance, choose *Terylene*.

Three years ago, British Ropes, Ltd., supplied a number of their women operators with one nylon work overall each, to be washed every weekend. *Replacements*

Continued on page 99

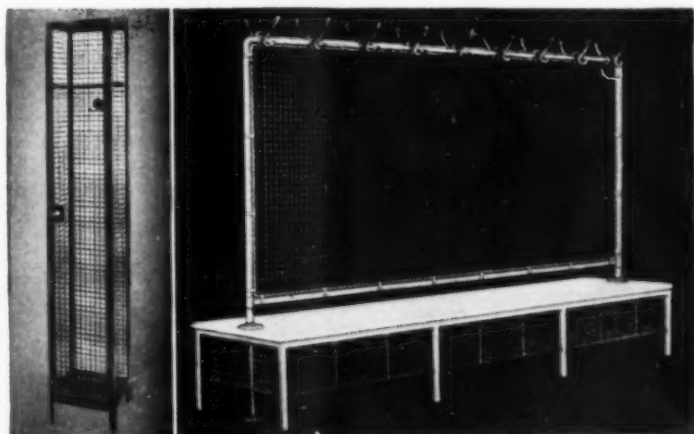


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UP TO SPECIFICATION :
Safety boots and shoes
are now being made to
B.S.I. standards

All photographs on this page and the left-hand picture at the foot of page 96 are reproduced, by permission, from the new safety handbook issued by the Dyestuffs Division of Imperial Chemical Industries, Ltd.

HANDLING CHEMICALS
Gloves and overalls of
resistant materials pre-
vent contact, face-mask
guards against fumes



panies that undertake their own washing, for it may mean a saving of as much as 25s. a year in the laundering of each garment. It can also mean a considerable reduction in capital outlay on laundry equipment.

The price of nylon and Terylene is two to three times that of cotton, but careful experiments generally prove that after all allowances have been made, these garments are worth buying from an economic point of view. There is a slight delay in obtaining articles made of nylon, and Terylene is only available at present in very limited quantities (enough can, however, be obtained for tests).

Plastic suits are available in many designs. Unfortunately, the impervious nature of the material results in condensation of perspiration on the inside of the garments, with resulting discomfort to the wearer. For emergency use,

however, they offer a very high degree of protection, and aprons in either supported or unsupported plastic have many uses in all sections of a works, including the canteen.

Fireproof Clothing

Fireproof clothing is available in the form of a boiler suit made from a cotton which is specially treated before weaving and which complies with B.S.S. 1547/49 for flameproof clothing. This fabric is of a more open weave than that used for ordinary fabric clothing and is cool to wear. The garments can be washed in *Lissapol* and do not need to be re-fireproofed after washing.

Very many lost-time accidents are the result of toe injuries. This type of accident could be virtually eliminated if all workers wore footwear with an internal steel toe-cap. The British Standards Institute have published standards for both the toe-cap and the boot or shoe, and it is now possible to obtain boots and shoes which have a good appearance as well as giving first-class protection.

Safety Boots

Leather safety boots, shoes and clogs have been sold widely in this country for the past decade. Rubber ankle boots with an internal steel toe-cap were marketed more recently, and now the wellington safety boot is available.

A synthetic soling material

called Neoprene, which appears to have a considerably longer life than rubber or leather, has proved satisfactory in use and has quite good non-slip properties. Footwear fitted with this material can now be obtained.

During the last few years, there have been improvements in both natural fibre and plastic materials for protection against the weather. In cotton, there are the ventile fabrics, which are resistant to water but permit water vapour to pass through them. In this type of cloth, the moisture does not condense on the inside and the garment is therefore very comfortable to wear for long periods.

Many fabrics, however, have now been given plastic treatments—among them, coats for manual workers. Unlike the oilskin coat, these are not sticky; they have good tear resistance and are inexpensive. Full-length coats are on sale at less than £2 each, the price depending on weight of material.



GOING DOWN : If there are fumes below, complete respirator apparatus is needed



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installations!*



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Policy Column

CANTEEN ORDER

LIFTED

A good deal of fluttering will be caused by the revocation of the Canteen Order (S. R. & O. No. 573), which was repealed with the rest of the Defence Regulations last December.

This means (or appears to mean) that, as from now, no firm need operate a canteen unless there is a separate Welfare Order for that particular industry. The probable result will be a lot of talk about closing canteens or abandoning projects—but very little action.

Few canteens, if any, were actually provided under the regulations of the dear departed. Most firms either continued war-time or pre-war catering arrangements, or set up canteens on their own initiative in post-war years.

If firms talk of closing their canteens, they will do so because only very limited advantage is taken of the subsidised meals provided. Costs in themselves are still secondary.

In most good canteens, three-quarters of the factory's population will buy something every day, and more than half will buy a hot meal. The money spent on subsidy meets a real need and employers know it. But where local habits or the close proximity of employees' homes make the canteen only 40 per cent. effective for snacks and ten per cent. effective for hot meals, it is obvious that someone is going to ask: "Is this worth while?" And the same applies to an inefficiently run canteen, which is simply incapable of drawing the customers.

Another consideration must be taken into account. Where subsidised meals have become an integral part of a firm's employee services, they may be considered as part of wages paid. In any event, their withdrawal would meet with very strong opposition.

How Many Classes of Dining Room?

By WINIFRED McCULLOUGH

*Senior Canteen Adviser,
Industrial Welfare Society*

WHENEVER a new canteen is planned or an existing one "made over," the question arises: "How many different classes of dining room shall be provided?"

An American-type firm (e.g., Chappie, Ltd., of Melton Mowbray) will provide a dining room simple enough to house people who work on somewhat wet and greasy processes, but bright enough to accommodate the higher executives, directors and visitors. Chairs, tables, floors and counters are easily cleaned. The dining room is businesslike but gaily painted, and there are flowers growing on every window-sill . . . by arrangement with a local florist. The only class distinction is one of time. Men and women from the production line tend to eat earlier than clerks, chemists and executives.

Holy of Holies

Contrast with this the older type of factory, of which a London brewery is typical. Here there is one room for men and another for women. Foremen eat in one small dining room and chargehands in another. There are senior and junior staff dining rooms and there is a holy of holies for brewers. There is also a directors' private dining room and a visitors' room.

More usual than either of these is the three-room system, i.e.,

works dining room, office dining room and directors' dining room.

Judged from the point of view of working economy, there is no doubt which of these arrangements is preferable. The one-for-all system makes the best use of labour. It means that canteen staff, all working together in one room, can help one another freely as the demand changes from soup to main course, from main course to sweet and from sweet to ice cream, cigarettes and tea.

More Waste

This plan is also the most economical from the point of view of material consumption. If a menu showing three choices must be offered in three or more places, the incidence of left-overs must be greater than on the one-run counter.

Unpopular though they may be, there are other considerations to be taken into account. These include the privilege of being waited upon, and of sitting down to a table that has been laid with rolls, water, condiments and sauce, as well as polished cutlery and a clean cloth. Here and there these old ways are broken down by the building of a new one-unit canteen. Here and there they break down of their own accord, as when men and women cease by tacit agreement to

The social organization of the factory is reproduced in the canteen, where there may be one dining room or several. Here are some attitudes and answers to the problem of class distinction at meal times.

occupy separate dining rooms. The modern trend appears to be towards one dining room for works employees, another for office staff and a private room where directors can entertain guests. Directors may eat in the office dining room, except on occasions when they have guests to entertain or business to discuss over their mid-day meal.

Key Questions

The following questions need to be examined before deciding whether to build one dining room or several.

- 1 Can sufficient space be planned in one unit for all personnel to eat together?
- 2 Is the dining room accessible to all? Expensive as it is to carry food to a subsidiary canteen, it may be far cheaper than a long journey at every break for factory personnel.
- 3 Would all the employees agree to eat in one room? How far is the privilege of separate rooms valued?
- 4 Is the manufacturing process sufficiently dry and clean to

Continued on page 104

Talking Points

HONOUR BRIGHT

THE following letter comes from William E. Cary, Ltd., the Manchester firm of spring manufacturers. It proves that good canteen surroundings and good meals make well-behaved customers.

"The amount of cutlery stolen or lost . . . has been almost negligible. When we opened our new canteen just twelve months ago, we expected the same substantial losses that we had experienced in our old canteen. But we find that more congenial surroundings and trust in the diners have produced better results. We had intended to inaugurate a deposit scheme, but the necessary discs were not ready in time for the opening and we were compelled to issue cutlery without any check. The results are so good that we have not yet introduced the deposit system. We hope it will be unnecessary to do so."

Apprentice Cooks

VERY large firms with canteens staffed by trained caterers and cooks would do well to read through the apprenticeship scheme for cooks published by the

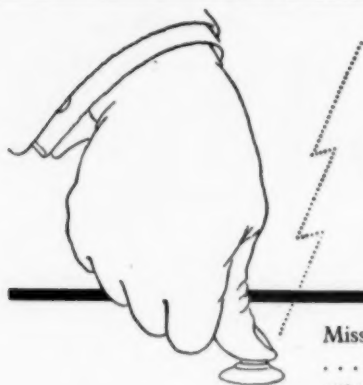
National Youth Apprenticeship Council of the Hotel & Catering Industry (24, Portman Square, London, W.1.). The period of apprenticeship is five years, or three if certain classes are taken. There is a six months' period of probation and in some circumstances apprentices may be transferred to another employer. Whilst designed for hotel and restaurant personnel, such a scheme would be of great benefit to industrial catering, where there is a shortage of properly trained cooks experienced in the ways of factory kitchens.

Directorial Quotes

"I cannot imagine anything more awful than a canteen in which conditions are not as good as they might be . . . Have a well run canteen or don't have one at all . . ."

"Canteens, like pubs, take on the character and atmosphere of the person running them . . ."

—Extracts from an address by Mr. J. Maslin, Personnel Director of Accles and Pollock, Ltd.



Miss Jones! Miss Jones!!
where IS Miss Jones?

Miss Jones, we regret to say, is away today. A little (ahem) stomach upset . . . Possibly something she ate . . . Or, we would add from considerable experience, something she has used for eating with—a spoon, a fork, a glass . . .

Research leaves no doubt whatever that many minor ills (and sometimes major outbreaks) are traceable to unsatisfactory washing-up in the canteen. A single infected utensil can spread germ-infection widely, and the result is a total of 'time-off' that can seriously hinder production . . . Don't blame the canteen staff. Instead, if you want your canteen to be above reproach, write for details of the Deosan Clean Food Service Routine. No extra work; in fact less work. No great cost; in fact an incalculable saving . . . Miss Smith, take a letter to :—

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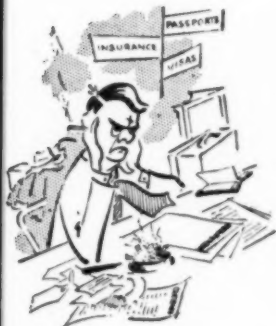
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HOW MANY CLASSES?

Continued from page 102

make it possible for those not wearing overalls to use the same chairs and tables as other workers?

- 5 Is there need for privacy for executives or directors, e.g., during lunch-time meetings?
- 6 Would it be possible to entertain visitors in the open canteen, or is discussion with guests at meal times a necessary and private part of management business?

The other question concerns the directors' dining room. It is this: do the workers really like to have directors eating within earshot? Not just occasionally, not just some directors—but all of them every day. And do the directors want to eat and take their leisure every single working day under the eyes and ears of their employees? If not, separate accommodation ought to be provided.

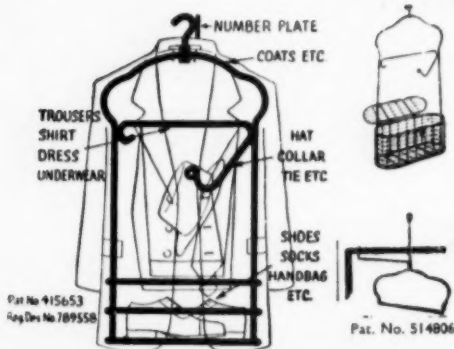
THEIR PRICES AND YOURS

The following table of prices charged for canteen meals in Newcastle and district may be of interest. The sample, covering nine canteens, was taken in February of this year. Given in light type is the number of canteens which provided the item named at the price quoted in the line above.

Main Meal	...	6d.	7d.	8d.	9d.	10d.	11d.	1/-	1/1	1/2
Number providing	...	—	—	—	2	—	1	2	2	2
Sweet	...	2d.	2½d.	3d.	3½d.	4d.	4½d.	5d.	6d.	—
Number providing	...	1	—	3	—	4	1	—	—	—
Soup	...	1d.	1½d.	2d.	2½d.	3d.	3½d.	4d.	—	—
Number providing	...	1	—	3	—	5	—	—	—	—
Tea (cup)	...	1d.	1½d.	2d.	2½d.	—	—	—	—	—
Number providing	...	5	4	—	—	—	—	—	—	—
Tea (½pt.)	...	1d.	1½d.	1½d.	1½d.	2d.	2½d.	—	—	—
Number providing	...	3	—	4	—	2	—	—	—	—

Canteen Equipment is reviewed on pages 122 & 124

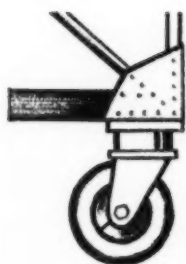
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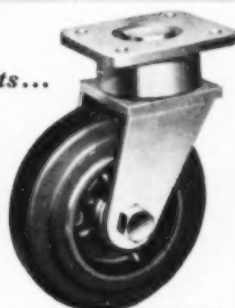


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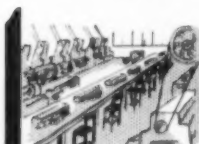
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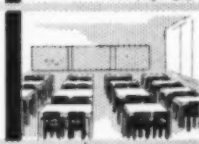
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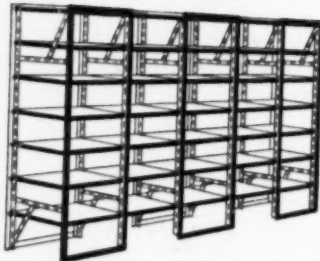
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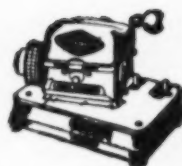
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Business EQUIPMENT SURVEY SECTION

- New for Your Office.....109
- Industrial Equipment.....116
- Canteen Equipment.....122
- Welfare Equipment.....124

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THE principle of pegboard analysis has been known for some years, but the advantages of the system for statistical work are only now being generally realized. A new piece of equipment of this type is named the *Summariser*. Savings of time and effort on statistical analysis spring from the fact that only the original forms themselves are used and the design of the equipment allows these to be handled quickly and easily.

Forms are attached to a bar at the head of the board. Every board overlaps its neighbour, leaving one or more columns visible on each. An easily-adjusted line guide runs across the width of the board, enabling the operator to cross-total speedily and accurately.

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Analysing statistics from the original forms; the *Summariser* in use

Summariser at one time. Since unit forms are used, simple re-sorting enables a variety of information to be produced without re-writing original material. Totals for areas, salesmen, branches, commodities, etc., can be produced in the minimum of time and without the risk of copying errors.

The equipment is flexible and can be used for such operations as the analysis of sales, expenses, goods requisitioning, stock and in-

ventory, goods issued or delivered, production, manpower and costing—in short, any problem that calls for the compilation and analysis of information from different sources.

Enquiry Ref. No. O.4/1.

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Clean and practical desk design

are finished to match the top and each drawer is fitted with a lock.

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Enquiry Ref. No. O.4/2.

Quicker Sorting

SORTING trays that can speed the separation of cheques and small papers into categories are tradenamed *Donday*.

They are made of sheet metal and are available in two styles—open-topped and pigeon-hole. The trays can have any number of divisions and can be built up into tiers if a large number is required.

A slide is provided above each division to take an identifying label. These labels go on the front

of the pigeon-hole type and at the back of the open-topped trays. Stove enamelling provides an attractive and durable finish.

Enquiry Ref. No. O.4/3.

My Card!

ESPECIALLY useful to sales representatives and other people who have to do a lot of calling is a new visiting card dispenser. A dozen cards up to 2½in. by 3½in. can be accommodated easily within its plastic body. Nevertheless, the overall thickness is less than half an inch, so the device can be slipped into the waistcoat pocket.

A small rubber roller in the hinged lid is revolved by the thumb to feed the cards out one at



Thumb-action visiting card dispenser

a time. The moulded plastic case is finished in two colours—maroon for the lid and cream for the body.

Enquiry Ref. No. O.4/4.

Fills and Seals

ANY firm that has to handle a large amount of correspondence, advertising mailing, etc., should find the *Ertma* envelope-filling and sealing machine valuable.

Made in Switzerland and now available in this country, the machine can handle letters at speeds between 1,800 and 3,000 per hour. It is small enough to be used on an ordinary table (the base measurements are 23 by 26in.). Envelopes of sizes between 4½ by 6½in. and 4½ by 9in. can be handled. If required, the machine can be supplied to fill and seal envelopes of other formats. Capacity of the

Business EQUIPMENT SURVEY SECTION

hoppers is 350 letters and envelopes; several documents can be put into the one envelope provided they have been arranged to form an inset.

Two independent electric motors are fitted. One controls the suction feed device and the other drives the machine. A spring-pressure



Compact speed: the Ertma envelope-filling and sealing machine

safety clutch prevents damage to movable parts through overloading.

The envelope flaps are damped by a fine jet of water; the exact dosage can be varied to suit the quality of the adhesive. Many of the machine's components are

made of light metal and the total net weight is 114lb.

Enquiry Ref. No. O.4/5.

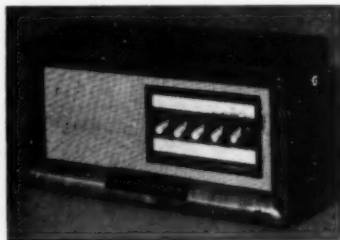
Easy Contact

PERSONAL intercommunication system with some interesting new features can be used to link an executive with six or twelve extensions.

Pressing the appropriate key on the master station automatically calls the extension; there is no separate calling key to be operated. For staff location purposes, all the extensions can be called without each one having to be switched on. The privacy of each station is nevertheless preserved. An engaged signal informs an extension if the master unit is in use.

A useful feature of the new system is that loudspeaking of telephone calls can be obtained. This facility eliminates delays through "holding on," etc.

The master station cabinet is of polished walnut and has a recessed front so that the call keys do not project beyond the edge of the cabinet. A bar, inset into the bottom of the cabinet frame, replaces the normal speech control key. Dimensions of the master unit are 13½ by 6½ by 7½in. and of



Master station of the new "intercom"

the extension units 8½ by 5½ by 3½in.

Cabinets more rugged than the standard polished walnut can be provided for installation where the instrument will have hard usage.

Enquiry Ref. No. O.4/6.

Mechanical Cashier

IT is not uncommon to find that firms with extensively mechanized accounting departments continue to count and fill wages into pay packets by hand. Such a procedure obviously sacrifices some of the advantages gained by using accounting machines.

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| 2 COMMON ELM | 7 HAWTHORN |
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| 5 COMMON OAK | 10 HOLLY |

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... and compare it with this chart. Can you classify it? Probably not, from the few illustrations given, for there are numerous shapes, each with many variations —

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(or is it Duplicating and Printing)

Let's get this clear!

An ordinary duplicator is used for duplicating and not for printing. Similarly, an ordinary printing machine is used for printing and not for duplicating. If you want to do both with equal efficiency and economy on the one machine, then what you need is a Rotaprint.

What are the advantages of installing a Rotaprint? Well, from the above analysis the first advantage is clear. You can use it for duplicating typescript reports, minutes, agenda, etc., and also for printing office stationery or sales literature. The next advantage is that you can also print in colours and on all kinds of paper or thin card. Thirdly, the thin flexible Rotaprint plates from which the image is printed can be filed easily in the ordinary office filing cabinets for immediate re-use as required.

KAYE'S

Rotaprint

HONEYPOT LANE, LONDON, N.W.9

Telephone: COLindale 8822 (12 lines)



Follow this up with such points as completely simple operation, speed of output, low operating costs and above all, the finest quality of reproduction you have ever seen from an office machine, and you will begin to appreciate why Rotaprint is the choice of so many business houses, large and small. Yes, Rotaprint is worthy of further investigation. The Enquiry Form below is ready for you now and its completion will place you under no obligation whatsoever. Why not fill it in?

ROTAPRINT ENQUIRY FORM

Please send, without obligation, printed specimens and full details of Rotaprint.

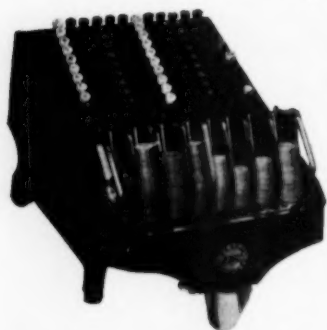
NAME

DEPARTMENT

Pin this Enquiry Form to your letterheading and post to Kaye's Rotaprint Ltd., Honeypot Lane, London, N.W.9.

B5

Business EQUIPMENT SURVEY SECTION



Cash is counted out automatically by the Brandt mechanical cashier

cleared up. Silver and copper coins are stacked in hoppers at the front of the machine. When a particular amount is required, one of the 120 keys is pressed and the exact amount is delivered down a chute. A separate key is provided for every sum between 1d. and 9s. 11d., so there is no addition or subtraction to be done. The mental effort involved in counting out money is thus entirely eliminated.

When the stock of coins in a particular hopper becomes low, the machine locks automatically; re-

plenishing the hopper releases the machine. Storage trays are supplied for holding supplies of different coins. The hopper for any particular denomination can thus be refilled instantly. The trays measure 9in. by 5in. and are made to fit on top of each other, providing the cashier with an ample supply of coinage for making up the payroll.

Enquiry Ref. No. O.4/7.

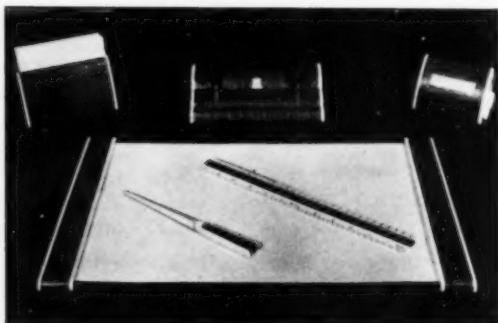
Handsome and Useful

EQUALLY suitable for the executive's own desk or for presentation to business friends,

Elk desk sets are both handsome and functional. The complete set consists of six pieces: blotting pad, desk calendar, memo cabinet, 12-inch ruler, letter-opener and pen stand. All the pieces are moulded from *Elkon* plastic in either ivory or brown and are inlaid with real leather.

Three types of finish (standard, morocco or pigskin) and several colours are available for the inlays.

The pen stand has a hinged lid which conceals receptacles for pins, clips, rubber bands, etc. It can be fitted with a pair of pen funnels if required. Changing the date on the calendar requires only



For personal use or presentation: a well-finished and durable desk set of six matching pieces

AND NOW!

THE SIMPLEX

B.I.F. Olympia,
[27 APRIL-8 MAY
STAND J.26.

FRANKOPOST OFFERS AN OUTSTANDING NEW DESK MODEL!



SIMPLEX - Eliminates Postage Stamps and the Post Book.

SIMPLEX - Prints all values up to 6½ in ONE impression.

SIMPLEX - gives automatic accountability by two meter readings.

SIMPLEX - prints YOUR Advertisement or "Return Address."

SIMPLEX - can be justified by a mail of 10-20 letters per day.

The Small Mailer's Postal Franker

Details from

UNIVERSAL POSTAL FRANKERS LTD
REGENT STREET, LONDON, W.1 REGENT 2249

Other
"FRANKOPOST"
MODELS

MULTI-VALUE
(Hand or Electrically operated)

Prints up to 29/11½d or lesser maximum for Inland Letters—Parcels and Airmail

PITNEY-BOWES

(Electrically operated)
High Speed Franking and Sealing Machines

MERCEDES

is the your answer
TO ANY

**BOOKKEEPING
OR CALCULATING**

problems!

For in the Mercedes long range of equipment there will certainly be found the right machine to handle any of these problems in the way YOU want it. Ring or write for fullest information.

MACHINE ACCOUNTING?

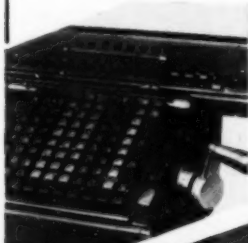
Sales, Purchase, General Ledgers, Analyses of all kinds, Payroll and P.A.Y.E. Records, Stores and Cost Accounts, and many other special jobs.

INVOICING?

Cut forms or Continuous length—one copy or a dozen—Totalled or simply written.

CALCULATING?

In decimals or direct £ s. d.



MERCEDES STERLING

Bookkeeping & Calculating
Machines Ltd.

11 Ludgate Circus, London, E.C.4. Phone: CENTral 7351 (PBX)

Elliott Addressing Machines Save Time

A large per cent. of the many millions of addresses that are typed each day are the same old addresses that have been typed day after day, year after year, in the past.

**This is very costly and easily
avoidable because....**

An address typed just once in an Elliott address card will reproduce its imprint at any time and for as many years as you could possibly require it.



When Elliott entered the addressing machine business in 1899 the most popular addressing machine printed addresses by squeezing an ink ribbon between an embossed metal address plate and the form to be addressed.



And although this process is extensively used today, it is gradually being superseded by the Elliott process because of the speed and visibility and silent operation of Elliott addressing machines and the fact that Elliott address cards are light and typewriter stencilable and clean to handle, and also serve as record cards.

**ADDRESSING
MACHINES
HAYWARD
LIMITED**

62, Britton Street,
Clerkenwell Road,
LONDON, E.C.1.

Telephone : CLERkenwell 5961 (2 lines)

Business EQUIPMENT SURVEY SECTION

the turning of a knob at the side. The day, date and year appear in a window at the front and are printed all in one line.

Any or all of the pieces can be stamped in gold with a client's name or an advertisement. If required, the pieces can be purchased separately, although this detracts from the appearance of the set, which is designed as a whole.

Enquiry Ref. No. O.4/8.

Modern but Restrained

CONTEMPORARY in design without being "arty," a new double pedestal executive desk is ideal for modern offices.



The desk is constructed of mahogany, with a solid top and two tapering plinths to raise it from the floor.

The left-hand pedestal is fitted with three small drawers and a dictation slide. The other pedestal has a single small drawer plus a deep filing drawer; it is also equipped with a slide. The top drawer in each pedestal has a lock.

Dimensions of the desk are 5ft. long, 2ft. 9in. wide and 2ft. 6in. high.

Enquiry Ref. No. O.4/9.

Small enough to fit the hand, this stapler may be used for jobs which would be inaccessible to standard machines

In keeping with the modern office: a double pedestal executive desk of advanced design

For office feature articles, see pages 79 and 83

Hand Stapler

SHAPED to fit the hand, the new Handy plier stapler can be used for many jobs for which a standard desk model would be unsuitable. It has a full 3in. reach



and uses standard staples. Tackling can be carried out efficiently with the Handy when the anvil is folded back.

There are no loose parts to be lost and loading is quick and easy. The stapler has an attractive Polychromatic finish.

Enquiry Ref. No. O.4/10.

new compact precision built



COUNTERS

fit more easily
into any one of
1,000 different products

Introducing an entirely new Small Resetting Counter developed and produced by Britain's leading manufacturers of Counting Devices.

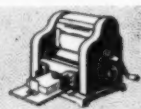


ENGLISH NUMBERING MACHINES LIMITED

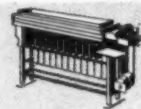
DEPT. 38 QUEENSWAY, ENFIELD, MIDDLESEX
Phone: Howard 2611/5 Grams: Numgraco, Enfield

SERIES 436

4 and 5 figure Reset Ratchet or Rotary Drive Counters. Further details supplied upon request.



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TELEPRINTERS



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IT PAYS TO COUNT OR NUMBER ON E.N.M

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*Proof
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Rust and
Rodents!*

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2 KEYS.

ADJUSTABLE SHELF.
EXTRA SHELVES
AVAILABLE.

SIZE APPROX
36 in x 18 in x 15 in

Steel CUPBOARDS

F. C. BROWN,

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An indispensable record of arrivals and departures, an automatic and accurate statement of hours worked, and a filed index of wage rates, overtime and other man-hour statistics for the efficient planning of industry. You can get all this on the Gledhill-Brook Recorder.

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TIME RECORDERS AND COSTING SYSTEMS

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38 EMPIRE WORKS - HUDDERSFIELD

APRIL, 1953

COST CONTROL

Can't risk a NERVOUS

Break-down . . .

COST Control is the nerve centre of your business. For efficiency's sake make Lamson Carrier Tubes its nervous system, reaching out to all departments . . . transmitting vital messages and important data without risk of mechanical breakdown or human error . . . carrying instantly wherever they are required, permanent written records of all transactions. Lamson Carrier Tubes save time and labour and promote accuracy and efficiency throughout the organisation you control. Will you give us a chance to prove it? Write to Dept. "D"

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CARRIER TUBES

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System*

LAMSON ENGINEERING CO., LTD.

Hythe Road, Willesden, London, N.W.10.

Tel: LADbroke 2424. 'Grams: Kelywil, Harles, London.

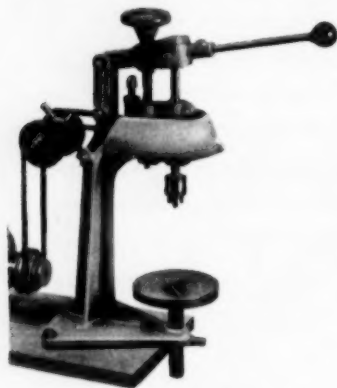
INDUSTRIAL EQUIPMENT

MACHINERY

Twin Feed Drill

DRILL breakages are greatly reduced with the *Enchantress* composite feed drilling machines, the manufacturers claim. Alternative hand-wheel or lever feeds are provided and these give super-sensitive control of the drill, without backlash. The two feeds cover all requirements over the speed range of the machine, and provide for different drill sizes and materials.

Four simple adjustments allow spindle side-play and vertical backlash to be eliminated. Belt driven, the *Enchantress* has no gears and is powered by a $\frac{1}{2}$ or $\frac{3}{4}$ h.p. electric motor. Three speeds of running are obtainable, and table and depth stop are both



Alternative wheel or lever feed

adjustable. A $\frac{1}{2}$ in. keyless chuck is fitted as standard, but a $\frac{3}{4}$ in. or $\frac{1}{2}$ in. key-operated chuck can be supplied.

Finished in grey enamel, the drill weighs 18 $\frac{1}{2}$ lb. without motor and its overall height is 1 ft. 6 in.

Enquiry Ref. No. F.4/1.

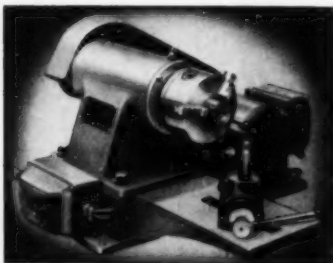
Hand Polishing

PRIMARILY designed for the treatment of wire, rod and tube drawing dies, the Type 2006/3 hand polishing machine has several other applications. These include polishing operations on spindles, guides, bushes and other circular workpieces.

A quick-release hand rest, designed for instantaneous position-

ing by the operator, is normally fitted for die work. It acts as a safeguard and a "steady" to the operator when pressure is applied to the workpiece.

The machine is fitted with a $\frac{1}{2}$ h.p. motor; a starter and isolator are mounted on the same base,



Hand polishing machine, supplied as unit with motor and starter

forming a single complete unit for wiring.

Standard chuck is of $\frac{1}{2}$ in. self-centring design, but larger chucks up to $\frac{3}{4}$ in. can be accommodated. Alternative polishing speeds of 2,400 and 3,150 r.p.m. are provided by a double-grooved pulley.

A reciprocating hand-tool, which simulates the hand polishing operation at greatly increased speed, is available for use with the machine.

Enquiry Ref. No. F.4/2.

Air Pressure Welder

THE Sciaky B.S.A. air-operated, bench-type spot welding machine is intended for fabricating small, light components. There are two models, of 2 and 7-kva. nominal capacities. The larger machine can weld mild steel sheets of up to 16 s.w.g.

Automatic in operation, the machine takes control and completes the welding cycle once the

foot switch has been operated. A pressure switch ensures that the full pre-set pressure has been applied to the work before the current is switched on and that it is maintained until the weld is completed. Operation can be either electric, through a solenoid-operated air valve, or manual through a direct valve plunger.

Although compact and rigid in design and construction, the welder can handle fine and delicate assemblies such as radio valves, cameras and fountain pens.

All welding controls are housed in a separate cabinet. These include the electro-magnetic contactor, the heat tapping switch, the air reducing valve and gauge, the weld pressure and timing controls. A resistance capacitance timer accurately controls weld times of between 3 and 150 cycles duration. Alternatively, an electronic timer can be fitted giving weld times down to half a cycle.

Weld pressures of between 35 and 140 p.s.i. can be obtained on the smaller machine and up to 390 p.s.i. with the larger one. Each has a maximum electrode stroke of 2 in.

Enquiry Ref. No. F.4/3.

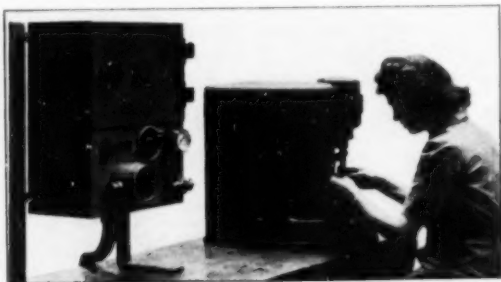
PORTABLE POWER TOOLS

Untiring Effort

IT is claimed that operator fatigue on construction and maintenance work is considerably reduced by a new type of air hammer. The important feature is the fitting of spade-type grips which ensure that the wrist of the operator is in line with the thrust of the blow.

Two models of the new hammer are available—the P.H. 113 and 114. The simplicity of their design (there is only one moving part) ensures long periods of trouble-free service. The changing of tools can be accomplished surely and quickly because of the patented octagonal chuck. A wide range of tools and accessories—chisels,

The Sciaky B.S.A. air-operated spot welding machine in use. Welding controls are housed in the cabinet on the left. Operation is automatic.



Watchman v Cosh Boy (Round I.)



IS CHARLIE- THE COSH BOY *"Casing your joint"?*

Scotland Yard stress the vital importance of staggering the times of a Watchman's rounds. Unless your Watchman carries out the **FOUR ESSENTIAL DUTIES** of an effective Night Guard the £300 or more a year he costs you is wasted.

Not merely must he make his patrols at frequent intervals and covering the whole area, but he must go round no faster than a policeman on his beat and at different times each night.

The only Watchman's Clock that enables you to see at a glance whether each of these **FOUR ESSENTIAL DUTIES** has been carried out is the **BLICK**.

Send now for our new booklet "Watchmen are Useless . . ." which explains both Problem and Solution fully.

BLICK TIME RECORDERS LTD.

96 Aldersgate Street, London, E.C.1. Tel: MONarch 6256/8



Business EQUIPMENT SURVEY SECTION



Lower operator fatigue is claimed for this new type of air hammer

routers, metal cutters, planishing heads, scrapers, drills, etc.—can be used with the hammers.

Weight of the P.H.113 (the smaller tool) is 4lb. and its overall length is 11½ in. Approximately 6,500 blows are delivered per minute and the hammer will work with air pressures between 50 and 150 p.s.i. Consumption is 6 cub. ft. per minute at 80 p.s.i.

Enquiry Ref. No. F.4/4.

Single-Side Welding

ONE of the major advantages of the new Argonarc spot-welding process is that access to only one side of the work is necessary, so that the process can be used on joints which would be inaccessible to conventional spot-welding equipment. A further advantage is that thin sections can be joined to thick ones.

The equipment consists of two main units; a transformer welding set and a control cabinet. Each



Simpler spot-welding; the Argonarc torch unit in use

unit is fitted with wheels and can be transported readily to the scene of operations.

The Argonarc torch uses heat from a low-current arc struck between a tungsten electrode and the workpiece. Manual pressure is applied with the torch itself and no skill is needed to operate the equipment. An electric timer varies the arc time over a wide range (usually 0.8 to 5 secs.) and

also automatically controls the flow of H.F. current, Argon gas and cooling water.

The arc is screened by the torch and the equipment can be used in any department without the need for goggles or screens.

Suitable for spot-welding stainless and bright mild steels and some non-ferrous metals, the process can also be used for tack-welding butt joints in thin gauge sheets.

Enquiry Ref. No. F.4/5.

INSTRUMENTS

Production Check

MAIN advantages of the Heliscope optical projector are: (1) it can be used to check work as it is being produced and (2) a curtain arrangement permits readings to be taken in daylight on the production line.

A visual image of thread forms and formed components is magnified up to 50 diameters and pro-



For visual checking of profiles: the Heliscope

jected vertically against a master template.

Since the machine weighs only 62lb., it can be moved to strategic points in the production line and used by inspectors or machine-operators to check work as it is produced, thus eliminating scrapping at a later stage.

Vertical adjustment of the workholder is obtained by sliding it up and down the main column of the instrument. Light is provided by a 12-volt, 48-watt bulb fed from a mains transformer in the base of the projector.

Master templates, which are reproduced photographically on

aluminium plates, are available to cover a wide range of thread forms.

An extra lens with a magnification of ten can be supplied for checking small-form tools, gears, pinions, etc.

Enquiry Ref. No. F.4/6.

MECHANICAL HANDLING

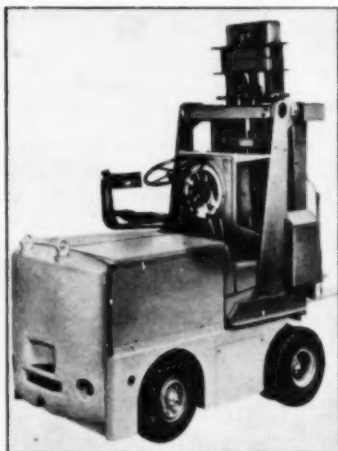
Weigh As You Go

SOME of the advantages of fork-lift trucks are dissipated when the weights of materials being handled are important and weighing the loads entails a separate operation. Several methods of incorporating weighing devices in the truck itself have been tried, but most of these have given only approximate results.

The manufacturers of the Wheelerweigh attachment, however, claim that their device is finely sensitive over its whole range. The instrument does not interfere with the normal operation of the fork truck and can be fitted to any type, however large its lifting capacity.

The weighing mechanism is isolated when not required, but pressing a button enables any load to be weighed instantly. The weight is shown on a large dial facing the driver. Arrangements can be made to calibrate the instrument so that the weight of a standard pallet, etc., is automatically subtracted from the indicated total.

Renewable hardened steel knife-edge centres and bearings protect the accuracy of the mechanism, which complies with all the appro-



Fork lift truck fitted with the Wheelerweigh weighing attachment

We've waited YEARS to be able to offer you

DEXION

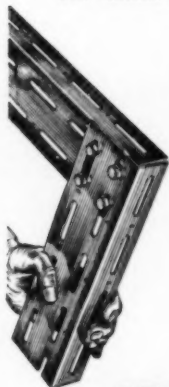
25% CHEAPER

- and IN STEEL!

Now for the first time you can have the *real* Dexion Slotted Angle—made of steel, bonderised and stove-enamelled battleship grey. 20% stronger than the aluminium alloy, it costs only £15 per two hundred feet (less for orders of 1000' and over). For almost any kind of equipment in factory,

office or stores, Dexion can save you time, labour and money. With Dexion STEEL you can save even more! But don't delay your order, because supplies for the home market are not unlimited.

Dexion in Aluminium Alloy will still be available if you need it.



NOW IT PAYS MORE THAN EVER TO

Build your own equipment with

DEXION

S L O T T E D A N G L E

**Just cut it
and bolt it
that's all!**

Send for free sample and illustrated booklet K5 to

DEXION LTD. 189, REGENT STREET, LONDON. W.1. phone: REGent 4841-5

Business EQUIPMENT SURVEY SECTION

private Board of Trade standards. Even valuable commodities can therefore be handled with safety.

Enquiry Ref. No. F.4/7.

PAINTS & FINISHES

999 Paint Shades

USING a grey or white base and no more than two tubes of colourant, 999 different pastel shades of paint can be produced by a remarkable new colour system. The new Colourizer paints have many important implications for architects, builders—and those responsible for the decoration of offices and industrial premises.

Apart from the vastly increased range of shades which they make available, the paints have other advantages. Matching any shade of fabric, wallpaper, furniture, etc., is very simple and any given shade can be repeated exactly at a later date. This is because the strength of the colourant in the tubes is controlled with great accuracy.

There is a total of 16 different colourants supplied in nine sizes of tube. A sample book showing all the 999 shades gives instructions for the colourant and base necessary to produce any given one of them. The quantity of colourant

needed depends on the shade required and the amount of paint being prepared. The colourants and base are easily mixed by stirring or shaking the tin and the paint flows easily during application. It is touch-dry in four to six hours and has high obliterating properties. Fewer coats of the new paint need therefore be used for many jobs.

Four finishes are available: undercoating, gloss, suede and egg-shell. Since the shades can be selected so easily and accurately, it is a simple matter to match the gloss finish for woodwork, etc., with the matt finish of walls. Undercoating a shade lighter than topcoating can be used and walls can be finished in different shades to give varying light reflection.

Trial panels can be prepared from a ½-pint tin because the decorator knows that when he prepares his bulk supplies they will match exactly. "Over buying" to safeguard against running short of a particular hue on contract work is eliminated. Trial-and-error mixing to get special shades is also abolished.

At present, pastel shades only are available, but deep tones are to be added to the range later.

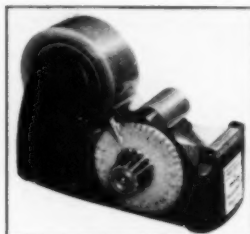
Enquiry Ref. No. F.4/8.

GENERAL EQUIPMENT

Saves Tape

NEW dispenser for Permacel cellulose tape delivers any length of tape from ½ to 20in. at ½in. intervals. The length required is set on a dial and the machine measures out the exact amount. This reduces the cost of sealing packages by eliminating wastage.

The dispenser is designed to take 72-yard rolls of tape up to 2in. in



Dispenses to pre-set length

width. Lengths in excess of 20in. can be obtained by releasing the pre-set length mechanism; the machine can then be used as an ordinary dispenser.

Enquiry Ref. No. F.4/9.



You can have a demonstration at your office any time you wish. Tomorrow if you like.

INCREASED CORRESPONDENCE

More letters going out every day means that more business is being brought in. You know that is true; but have you yet succeeded in really substantially increasing the flow of correspondence from your office?

Many of Britain's most progressive firms, the small ones as well as the large ones, have discovered that DICTOREL is the machine that really keeps correspondence moving. Years ahead of all the other machines that employ belts, discs or reels of tape or wire, DICTOREL actually records on sheets of ordinary commercial size paper, specially prepared to give 12 minutes of the clearest speech you have ever heard.

Everything else about the DICTOREL is equally in advance. It is the dictating machine of the future... available to you to-day.

MEANS INCREASED BUSINESS



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Technical Development and Service Depts:

169-174, Sloane Street, Knightsbridge, London, S.W.1. Sloane 6198 & 8470

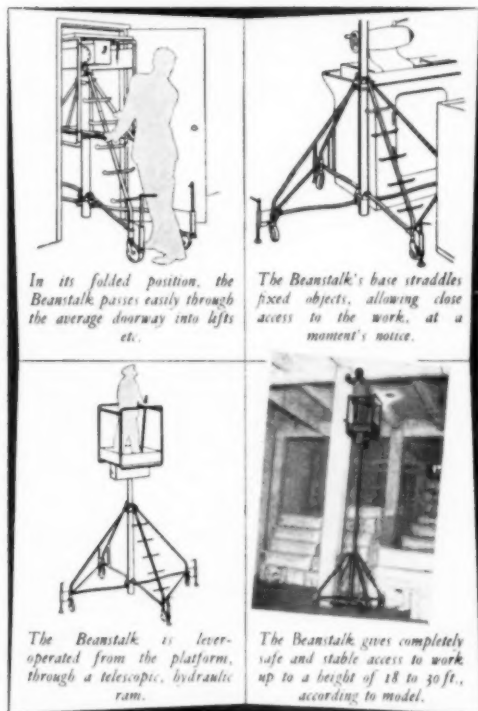
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With the Beanstalk, work on overhead jobs takes up the minimum of time and space. Write today for leaflet R4, to:—

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LA 5149



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SOME people use a pair of bellows, but they only move the dust somewhere else in the composing room, so we introduce this B.V.C. type cleaning tool. 'Type-toileting' by vacuum is simpler, quicker in 'every case'.

Its associated vacuum plant with suitable attachments can be applied to vacuum-cleaning operations of all kinds in composing room and machine room.

Have you a problem concerning the conveying, extraction or removal of light materials? If so please write us—there is no obligation.

B.V.C.

BRITISH VACUUM CLEANER

**INDUSTRIAL VACUUM
CLEANERS**

THE BRITISH VACUUM CLEANER & ENGINEERING CO. LTD.
DEPT. 1/1, GOBLIN WORKS, LEATHERHEAD, SURREY.

Business EQUIPMENT SURVEY SECTION

CANTEEN EQUIPMENT

Two-minute Soup Maker

A MACHINE that takes only two minutes to process two gallons of soup containing whole potatoes, swedes, carrots, etc., may be expected to increase considerably the productivity of the kitchen. Add to this a price which is about half that of a small mixing machine, and management interest is assured.

The Mulsamix, whose soup-making capacity has just been quoted, can do a good deal more. Here are some more performance figures: perfect batter from 1 gallon of water and 5lb. to 6lb. of flour in 1 minute; completely skinless tomato purée from 4lb. of tomatoes—2 minutes; thick vegetable purée from boiled vegetables and a little water—1½ minutes.

Powered by a one-tenth h.p. electric motor, the Mulsamix looks uncommonly like a portable power tool—and, indeed, that is what it is; for though it is designed primarily for the kitchen it will also tackle any job that involves blending a liquid and a solid into a completely homogeneous smooth-flowing mixture.

The motor works under load at 10,000 r.p.m. and drives an impeller in front of which are placed three stainless steel blades. These move in a cylindrical container and have both a chopping and a lifting action. When immersed in a liquid, suction takes place and the liquid is discharged through two ports near the impeller. Here there is a large bell which deflects the discharged liquid back into its container.



The Mulsamix Mixer

Two motors are being manufactured—one to cover the range 200 to 220 volts, and the other 230 to 250 volts. The machine is supplied in a wooden case with a spare set

of knives, 8ft. of flex and a 5-amp., 3-pin plug. An extension piece is available when deep liquids have to be mixed. Incidentally, the position of the switch has been altered since the photograph here shown was taken. It is now placed underneath the handle to avoid accidental operation while cleaning.

Enquiry Ref. No. C.4/14.

Clears the Drains

DISPOSAL problems in canteen kitchen sinks are quickly solved by the Wastemaster automatic waste disposal unit, which has recently made its appearance in this country. The machine can be fitted to the waste-pipe of any sink. It consists of a motor-operated shredder which grinds and pulverizes all food waste: peelings, parings, rinds, even scraps and bones—that might otherwise clog the drain.

Neat and compact in appearance, the unit is operated by turning on the cold water tap, then the switch. Automatic reversing of the motor and shredder each time the unit is switched on gives a self-sharpening, self-cleaning action and doubles the life of the blades. Apart from its drain-cleaning pro-

Continued on page 124

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A CHAIR that folds flat as a pancake, opens and closes in one movement, cannot nip the fingers, and occupies a floor space of only 17 by 20in. would seem to be the perfect answer to many canteen seating problems. These features are claimed for the latest *Fold-A-Bye* folding chair, which is a real triumph for simplicity of design.

The chair is the result of a great deal of research. When open, it is steady as a rock; when closed, it is only 2in. thick.

Enquiry Ref. No. C.4/16.

Sliced in Time

THE season is approaching when salads will be more prominent on canteen menus. An aid to their quicker and more economical preparation is the new *Multislice* tomato slicer. This simple but beautifully designed instrument will cut 1lb. of tomatoes into perfect slices in less than a minute. There is no waste, no loss of juice and no squeezing out of the pulp.

The machine is clean, hygienic and quick. The tomato is placed under an inverted "V" made of heavy section stainless steel. A rack holding 14 thin stainless steel blades is then lifted, and the slices fall to the plate below. The blades are sharpened on both edges and can be used either side up. There is a quick replacement service.



The Multislice in Action

Handled carefully, the *Multislice* can also be used for shredding lettuce or slicing cooked vegetables, beetroot, mushrooms, etc. But it should *not* be used for raw vegetables or hard-skinned fruits.

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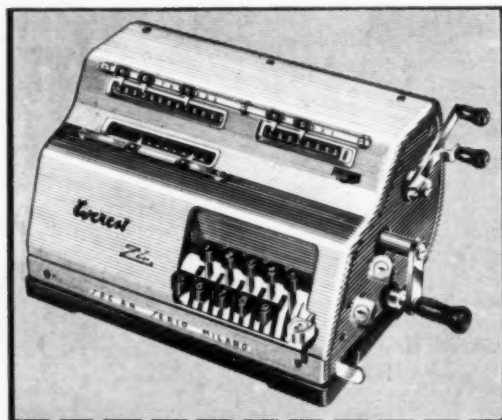
THE latest series of *SnoWhite* electrically heated drying cabinets includes two models which are suitable for factories, sports clubs, surgeries, etc. One model measures 72 by 48 by 19in., and the other 72 by 54 by 25in. The design includes easy-to-clean double casings and rustproof, swing-out rails.

A three-heat switch regulates the level of heat in the cabinet: "high" for the first 40 minutes of all drying and for all normal circumstances in which quick drying is required; "medium" for the economical drying of clothes that will be left in the cabinet for some considerable time; and "low" for very slow drying, or completing the drying of soft woollen articles, or for airing purposes only.

The cabinets have air space insulation, louvred tops, and are finished internally in cream and externally in duck green or cream. The elements are spirally wound

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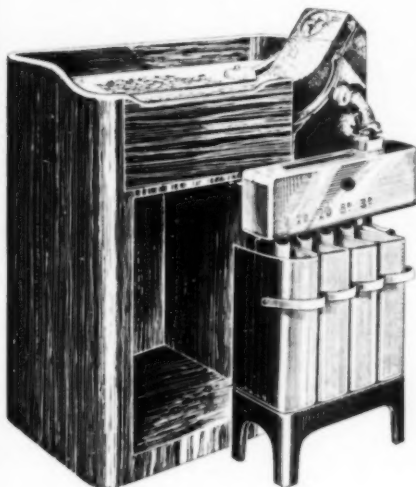
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prevent waste and spoilage of food, and perform other similar functions.

The unit was specially designed for air sterilization. The tube is housed in a quartzoid envelope which passes the long waves but excludes the short ones that are responsible for creating ozone. The lamp is, therefore, practically odourless. Furthermore, by using the low-pressure mercury arc principle, both the visible and heat rays are kept to a minimum. This enables the lamp to be used in refrigerators and rooms where low temperature is desirable.

The germicidal effect of the unit is comparable to that of changing the air in a room once every three-quarters of a minute.

Enquiry Ref. No. W.4/9.



The Volcano water heater is probably one of the cheapest on the market.

on refractory formers, and the units are guaranteed for 12 months.

Enquiry Ref. No. W.4/8.

War in the Air

ANOTHER new instrument has been developed for the projection of ultra-violet rays that will destroy airborne germs. At a cost of a few pence per day, the Hyginare unit will disinfect the air in the office, surgery or factory, destroy most obnoxious smells,

Instant Hot Water

CHEAP to buy and run, but perfectly efficient in operation, the Volcano instantaneous gas water heater (which is also available as a shower) is now well established on the home market. The North Thames Gas Board have set their seal on the product by placing an order for the heaters for sale to the public through their showrooms.

Each minute, the heater raises a quarter of a gallon of water by

approximately 80 degrees F. It uses half the quantity of gas needed by others of its kind and costs only 3d. an hour to run.

The heater is made of pure aluminium, welded to official British standards, and is guaranteed for 12 months. Its height is 40in. and its projection from the wall 4in. Models are available in various pastel shades or white stove enamel.

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BETTER SCHEDULES WITH LESS SUPERVISION

Continued from page 85

efore they become eligible for bonus. Deductions are made individually for culpable errors and consistent lateness. If jobs are not completed by the scheduled dates, a reduced bonus will, of course, be available for general distribution; conversely, if a job is completed ahead of schedule, the bonus payment is increased—in some cases almost doubled.

Although somewhat complicated to describe, the system is actually simple in operation and requires only a small quantity of recording and analyzing. Yet its power of incentive to get jobs cleared on time is very high.

3. General Office: This scheme was started in 1941, but has been modified several times since. It, too, is a group scheme and is paid when certain quarterly jobs in the office are completed on schedule. Points are allocated when work is finished on or before time. At the end of the quarter, they are totalled and so much per point is

paid into the bonus pool. The total is divided by 100 to give the value of each share—this is to ensure that the value of shares remains constant. Members of the staff are paid a number of shares according to the jobs they do (these again are graded on the O.M.A. scale).

Deductions can be made for all "lates" over three in a quarter.

Advantages gained from the schemes can be summarized as follows:—

Work is done on a day-to-day basis and peaks have been smoothed out;

Errors have been reduced; Supervision has been simplified;

Less overtime working is necessary.

Examples can be given to establish the last two points. Illness kept the deputy office manager away from the office for three weeks recently; yet all jobs were

completed on time, despite the reduced supervision. Last year, even during the peak month of December, very little overtime was necessary. The total was only three to four hours, worked mostly by the invoice office because the despatch department was on overtime. During the last quarter of the year (including the Christmas period), the chief clerk in the invoice office obtained 100 per cent. on-time clearances. At one time the pre-Christmas rush entailed long hours of overtime by all departments.

High Rates

It should be made clear that this reduction of extra working has not entailed a loss in the overall earnings of the employees. Basic rates of pay are higher than those recommended by the Joint Industrial Council; to these, all bonus earned is additional. But overtime was merely a payment for extra time, while bonus is a payment for extra production—a comparison which puts the case for incentives in its simplest form.

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NEW DEVELOPMENTS IN BUSINESS FORECASTING

Continued from page 58

takings, and by private industry. Except for the private sector of industry, this offers little difficulty. For the private sector, resort has to be made to indirect indications, such as the issue of building licences and to sampling procedures.

Consumers' expenditure cannot be estimated directly. But past records show that it varies directly from year to year with the gross national product. If we assume that consumers' expenditure is, say, 65 per cent. of gross national product (the exact percentage being calculated from previous years' records), then our total estimates of capital expenditures will represent the other 35 per cent., and a simple multiplication will give us a total estimate. This may then be checked by other means.

Once a global figure for national gross product has been obtained, it can be broken down to give a more accurate estimate, after such matters as taxation has been

taken into account, of the probable level of consumer spending.

This, however, is only the first step. An increase or decrease in overall spending will mean different things to different businesses. Higher incomes, for instance, will normally mean more expenditure on, say, tobacco, but will not increase, and may even decrease, sales of bread.

Using the Chart

Once again, past records may be used to determine the normal pattern of variations in the consumption of a particular commodity with variations in total spending. A typical example is the chart on page 57, showing variations in the consumption of lumber with variations in national income in the United States. The straight line showing the relationship (the "regression" line) can be inserted by hand or calculated exactly by mathematical means. And simi-

lar charts may be made not merely for lumber as a whole, but for different types of lumber in different markets. Lumber consumption, too, may be related to other variables whose level may be predicted, such as building activity or industrial production.

Finally, the sales of the particular company may be related to the sales of the industry as a whole by the same process, the ultimate result being a statement in these terms: "Next year we shall most probably sell so much, this estimate being subject to a margin of error of so much per cent."

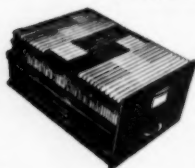
Latest development in the forecasting of general business conditions is the econometric model. This offers exciting possibilities: since it takes into account simultaneously a wide variety of variables. But far more research is needed in its use before it can be any real help to the practical businessman.

Internal Forecasting

In internal forecasting, the fundamental basis is again the sales forecast—though it should



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by no means be the exclusive basis. Simplest—and indeed only—method of finding out how much you are going to sell next year is to ask your sales staff. This is not easy—salesmen do not like forecasting their performance. But it can be done. John Ryan, vice-president of the Metal Box Co., Ltd., described how he did it to a British Institute of Management conference (see Box on page 58).

Once the sales forecast has been made, it can be translated into demands upon productive resources and capital requirements. Estimates of labour can be made. And plans can be made for extending or altering production programmes to fill idle capacity revealed.

Budgetary Control

Just how far this process will go will depend on the size and complexity of the firm. The large multi-product concern will obviously devote much thought to elaborate systems of budgetary control in order to achieve a detailed plan of campaign. But the smaller concern can also gain. Budgetary control is not a complex accounting technique; it is an attitude of mind. It was succinctly outlined by W. R. L. Warnock, a director of Charterhouse Industrial Development Co., Ltd., in four sentences:—

1. Make a plan which, if translated *exactly and precisely* into performance, will produce a satisfactory result.
2. Become aware of every variation from that plan at the earliest possible moment.
3. Act primarily to mitigate the effects of unfavourable variations (and, secondarily, to take advantage of favourable ones).
4. Revise the plan to accord with the new circumstances brought about by the variations.

The operative words are "make a plan"; the rider must be added, however, that a pre-requisite of any plan is a forecast. Organized forecasting will not always give the right answer. But it will, in the long run, reduce the area of risk and the necessity for action to mitigate the effects of unfavourable variations.

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HOW TO CUT LOST TIME

Continued from Page 6

perfect record receives a prize of some nature.

Good Time-keeping Bonuses
Each month, every worker with a perfect record is eligible to share in a production bonus—based on turnover or production over an agreed level.

Saturday Mornings Off: Some firms allow all workers with a perfect record either one or two Saturday mornings off a month.

"Blue Riband" Scheme: Other firms write every employee who has a perfect record for a year a congratulatory letter, accompanied, in some cases, by some token badge.

Team Prizes: Another method is to split the workers into departments or sections, and to award a prize each month to the team with the lowest percentage of lost time. In some cases, this prize takes the form of a clock, which is kept in the department which has won the competition—and is then passed on to the next winner. There is also in some firms a "wooden spoon" trophy—for example, a toy goat—for the department with the worst time record.

Lottery Prizes: Where it is considered too expensive to present prizes to everyone, a lottery can be organized in which all those with a perfect record are automatically included in the draw.

The exact form that an incentive scheme for good time-keeping should take is largely a matter of knowing the sort of thing that is likely to appeal to the particular group of workers concerned. Where a works' council exists, it may be best to let them decide the details of the scheme.

In one factory in the Midlands, everyone in the organization, from the managing director to the floor-sweeper, clocks on and off, and everyone gets a bonus of 10 per cent. of his earnings for good time-keeping.

Propaganda

The propaganda type of appeal is usually of more value in offices than in factories. It can be put over verbally, or it may take the



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Continued on page 132

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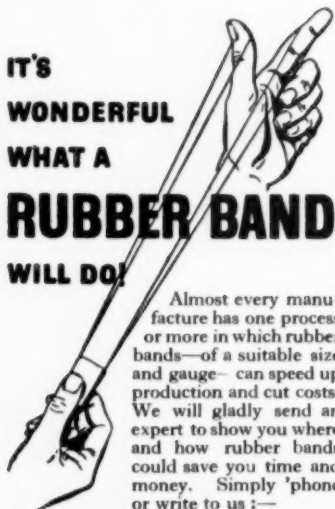


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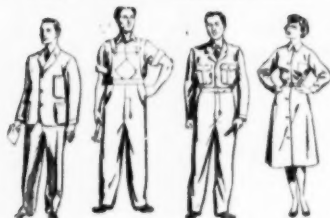
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HOW TO CUT LOST TIME

Continued from page 130

form of a notice on the office notice-board.

Two other factors that make for lower production per hour worked, and for a high absentee rate, are boredom and fatigue. One very well-known and very effective method of reducing these is to install loudspeakers in the factory. Results, however, are not so good if music is played continuously.

A ten-minute tea-break in mid-morning and mid-afternoon also actually increases production and reduces absenteeism.

"After about two hours," writes the Industrial Health Research Board, "most workers, especially those on monotonous repetitive work, show signs of boredom and fatigue. It is then that people begin to say, 'How time is dragging!'—then mistakes in work are made and output drops. A break of from 10 to 15 minutes after not more than two hours' work often prevents this falling of attention and interest, and the loss of the 15 minutes for production is more than made up by the increased output both before and after the break."

Whenever tea-breaks are in force, a system of bells should be installed to ring automatically at the beginning and end of each period to ensure that all workers begin and finish work at the same time, and that the break is not continued beyond its correct time. A warning buzzer should also be rung three minutes before the end of the break period.

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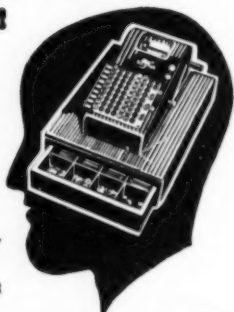
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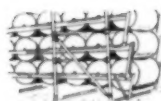


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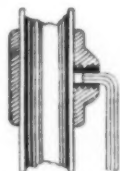
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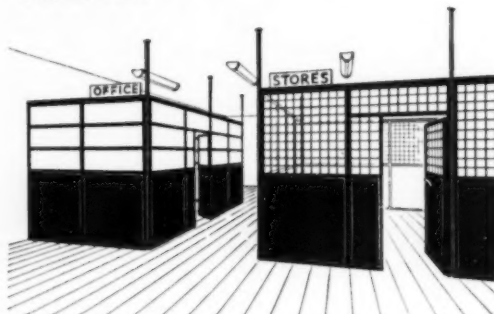
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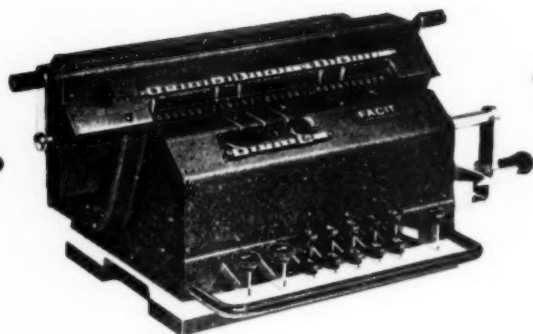
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